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# PROGRAM OF THE THIRTY-THIRD ANNUAL MEETING

*MONDAY, December 27*

2:30 P. M. AFTERNOON SESSION

Paper: THE RAILROAD SITUATION: AN APPRAISAL
Frank H. Dixon, Princeton University

Discussion:
C. O. Ruggles, State University of Iowa
A. M. Sakolski, New York City[1]
J. H. Parmelee, Bureau of Railway Economics, Washington, D. C.[1]

Paper: OUR FOREIGN TRADE BALANCE SINCE THE ARMISTICE
John H. Williams, Northwestern University

Discussion:
B. M. Anderson, Jr., Chase National Bank, New York City
Raleigh S. Rife, Guaranty Trust Company, New York City
William F. Gephart, Vice President, First National Bank, St. Louis, Mo.
George E. Putnam, Commercial Research Department, Swift & Co., Chicago, Ill.[1]
W. Arthur Shelton, Washington, D. C.[1]

5:30 P. M. Meeting of the Executive Committee

8:00 P. M. EVENING SESSION

Topic: ECONOMIC PROBLEMS OF THE SOFT COAL INDUSTRY OF THE UNITED STATES

Paper: AN INTRODUCTORY SURVEY OF THE BITUMINOUS COAL INDUSTRY
C. E. Lesher, Editor of the *Coal Age*

Paper: THE IRREGULAR OPERATION OF THE COAL INDUSTRY
F. G. Tryon, United States Geological Survey

Paper: COSTS AND PRICES IN THE COAL INDUSTRY
David L. Wing, Washington, D. C.

Paper: THE MARKETING OF COAL
George H. Cushing, Managing Director of the American Wholesale Coal Association

*TUESDAY, December 28*

9:30 A. M. MORNING SESSION

Topic: ECONOMIC PROBLEMS OF THE SOFT COAL INDUSTRY OF THE UNITED STATES (continued)

Paper: THE TRANSPORTATION PROBLEM IN THE BITUMINOUS COAL INDUSTRY
A. G. Gutheim, Manager, Public Relations Section, Car Service Division, American Railway Association

Paper: COMMENTS OF AN ORE ENGINEER
Arthur J. Mason, Chicago, Ill.

Discussion:
Arthur E. Suffern, New York City
Percy Tetlow, United Mine Workers of America
C. M. Moderwell, Coal Operator, Chicago, Ill.

[1] Took part in extemporaneous discussion.

Hugh Archbald, Philipsburg, Pa.
E. A. Goldenweiser, Washington, D. C.[1]
W. H. Hamilton, Amherst College, Amherst, Mass.[1]
C. E. Lesher, Editor of the *Coal Age*[1]
Messrs. Tryon, Gutheim, and Mason, in rebuttal

2:00 P. M. Business Meeting. (See report on page 179.)

3:30 P. M. AFTERNOON SESSION

Paper: THE THEORY OF PRODUCTION[2]
Leo Wolman, New School for Social Research

Paper: AN INDEX NUMBER OF PRODUCTION[2]
Walter W. Stewart, Amherst College

Discussion:
Carl Snyder, Statistician, Federal Reserve Bank of New York[2]
H. S. Person, Secretary, Taylor Society, New York City[2]
Willford I. King, Bureau of Economic Research, New York City[2]

8:00 P. M. EVENING SESSION

Paper: A REVALUATION OF TRADITIONAL ECONOMIC THEORY
Carl E. Parry, Tulane University

Paper: SOUNDINGS IN NON-EUCLIDEAN ECONOMICS
J. M. Clark, University of Chicago

Discussion:
Irving Fisher, Yale University
Frank H. Knight, State University of Iowa
B. M. Anderson, Jr., Chase National Bank, New York City
F. A. Fetter, Princeton University[1]
C. W. Doten, Massachusetts Institute of Technology[1]
Carl E. Parry, Tulane University[1]
J. M. Clark, University of Chicago[1]

*WEDNESDAY, December 29*

9:30 A. M. MORNING SESSION

Papers: FEDERAL TAXATION OF PROFITS AND INCOME
F. R. Fairchild, Yale University
Robert M. Haig, Columbia University

Discussion:
David Friday, University of Michigan
H. M. Stein, Stein, Ross & Sack, New York City
George O. May, New York City
John Whyte, National Association of Credit Men, New York City
F. R. Fairchild, Yale University

1:30 P. M. ROUND TABLE DISCUSSION OF THE TEACHING OF ELEMENTARY ECONOMICS

Chairman: David T. Clark, Williams College

Discussion by H. H. Burbank, Harvard University; Eugene E. Agger, Columbia University; John R. Turner, New York University; Carroll W. Doten, Masachusetts Institute of Technology; Raymond T. Bye, University of Pennsylvania; Dorothy M. Brown, Smith College

[1] Took part in extemporaneous discussion.
[2] Printed in the AMERICAN ECONOMIC REVIEW, March, 1921.

2:00 P. M. ROUND TABLE DISCUSSION OF FARM MARKETING[2]

Chairman: E. G. Nourse, Iowa State College

General Topic: FARMERS' ORGANIZATION PLANS AS RELATED TO THE EVOLUTION OF OUR MARKET MACHINERY

Special Topics and Speakers:

GRAIN STANDARDIZATION
H. B. Price, Yale University

STORAGE AND FINANCE PROBLEMS
James E. Boyle, Cornell University

STABILIZATION PROJECTS
B. H. Hibbard, University of Wisconsin

LEGAL AND LEGISLATIVE ASPECTS
Asher Hobson, Columbia University

CRITERIA OF MARKETING EFFICIENCY
Fred E. Clark, Northwestern University

3:30 P. M. AFTERNOON SESSION

Paper: A REVIEW OF FEDERAL RESERVE BOARD POLICY[2]
O. M. W. Sprague, Harvard University

Discussion:
A. C. Miller, Federal Reserve Board, Washington, D. C.[2]
R. C. Leffingwell, formerly Assistant Secretary of the Treasury[2]

5:30 P. M. Meeting of the Executive Committee

8:00 P. M. EVENING SESSION

President's Address: THE POST-WAR OUTLOOK[2]
H. J. Davenport, Cornell University

9:30 P. M. Smoker, in the Ball Room of Haddon Hall

*THURSDAY, December 30*

9:00 A. M. Business Meeting. Election of Officers, etc. (See page 179.)

[2] The papers presented at this Round Table on Farm Marketing will appear in the AMERICAN ECONOMIC REVIEW for June, 1921

# THE RAILROAD SITUATION: AN APPRAISAL

By Frank Haigh Dixon
*Princeton University*

This discussion is predicated upon the assumption that private ownership and operation of railways is the established policy for some time to come. It was no mere chance that private operation was resumed after two years of government management. Congress responded to an unmistakable popular mandate. Whatever the ultimate solution of this question may be, it is evident that the majority of the people are not yet ready to assume the entire responsibility for our transportation service. Many students of the situation, including some railway executives, have expressed the belief that private operation under government regulation is to have its final test at this time, and that if this test fails the country will take the plunge into government ownership. Certain it is that Congress has equipped the federal regulating body with every conceivable power necessary to ensure that the test shall be a thorough one.

It is the purpose of this paper to appraise the present situation, and if possible to throw some light upon the future, if only for a little way ahead. That such a task is not a simple one will be evident if it is recalled that although the roads went back to their owners on March 1, they remained under the protection of the government guarantee for six months thereafter. The new and increased rates prescribed by the Commission were not effective until August 26. Complete reports of operations are not available until six weeks after the close of the month reported, and traffic figures are slower still. Furthermore, any efforts to reach a final judgment are likely to be frustrated by the sudden shifts in the general industrial situation associated with the present deflation process. It is obvious therefore that we are too completely involved in the period of transition to reach any final conclusions.

For an intelligent appreciation of the present situation, one must go back to the Transportation Act of 1920 under which the roads were restored to their owners. This Act, in addition to prescribing the details connected with the restoration process, contained many provisions designed to strengthen the regulating features of the Interstate Commerce Act, some of which are altogether novel, some of which have been urged upon Congress for many years. No detailed analysis of this statute is practicable or necessary, but it is of importance to set forth the significance of the Act from the standpoint of our regulation policy, now in operation for a third of a century.

The most significant feature of this legislation is the altered relationship of the Commission to the service of transportation. Created

to prevent discrimination and ensure reasonable rates, the Commission established itself at the beginning as the guardian of the shipper against railway abuse. As time went on, its attitude became more judicial, but it never departed far from the theory that its function was to adjudicate the reasonableness and fairness of particular rates. Occasionally when large territories were involved, it did consider whether or not the rates under discussion were sufficient to yield an adequate return, but in taking this position it often met with vigorous opposition within its own membership.

Congress has now awakened to the importance of adequate transportation, and has given the Commission a mandate to see that the necessary service is provided. It has declared that the Commission shall so fix rates not merely that they will be just and reasonable, but that they will, under efficient management and with reasonable expenditures for maintenance, earn a fair return upon the value of the property used in the service of transportation; and that in determining what constitutes a fair return the Commission shall give due consideration to the transportation needs of the country, and the necessity under efficient management of enlarging facilities to provide the people with adequate transportation. By this mandate, the Commission is transformed from a negative judicial body into a positive constructive force for the promotion of the public welfare. It is responsible to the railways for their net earnings; it is responsible to the public for an efficient and progressive railway service.

A second significant feature of the Act is found in the provision relating to the disposition of earnings above that rate which gives a fair return. Whether Congress has the power to dictate to a carrier the disposition of its earnings when they exceed a certain per cent and to recapture a portion of them for general public purposes, is a question that the courts will doubtless be called upon to settle. But the legislation as it stands is profoundly significant. All earnings beyond a reasonable return upon its investment are held by the carrier as a trustee, and half of the excess must be surrendered to the government to be employed in the interest of transportation service as a whole. Furthermore the expenditure of the remaining 50 per cent of the excess is only to a degree at the discretion of the carrier. To be sure, the plan was devised for the purpose of solving the difficult problem of prescribing rates for parallel and competing railways whose financial condition was unlike, but it goes farther than the effect of a mere device. It touches the heart of the whole railway problem. In combination with other clauses of the Act, it goes far to rob the railways of any semblance of private character, and puts them in the class of public servants. Congress has declared what in the first two years is to consti-

tute a fair return upon the carriers' property, leaving the matter thereafter to the judgment of the Commission. The aggregate possible earnings that can be retained and freely used by the individual railway are by this provision narrowly circumscribed. Moreover, when we take into account also that the law imposes upon the Commission supervision of the honesty and economy of management and the reasonableness of the maintenance expenditures, that the Commission is given control over security issues and the disposition of the proceeds, that it must approve any new construction, and that no agreement for pooling or lease or consolidation is effective without its authority, we realize that the door has closed forever upon the private speculative period of railway finance. A public service the railway has always been in the eyes of the court. It is now actually to become so in the hands of its owners.

In the third place, the power granted to the Interstate Commerce Commission to fix the earnings of interstate carriers bids fair under this new legislation to become exclusive. A long step has been taken in the direction of obliterating state lines. State regulation of steam railways, except so far as it has been confined to police supervision, has been frequently pestiferous, conflicting, and obstructive; and it is doubtful whether on the whole there has been a net advantage for the public. The new legislation recognizes the unsatisfactory results of divided authority. Throughout the Act the supremacy of the federal power manifests itself again and again. Federal regulation of security issues and federal approval of consolidation plans are both to be final, notwithstanding the law or order of any state; and state authorities must fain be content with invitations to attend the hearings. In the specific matter of rate making, the new legislation enacted the decision of the Supreme Court in the Shreveport case, granting to the Commission the power to remove any unreasonable preference or advantage or unjust discrimination arising between intrastate and interstate commerce. Many states declined to put into effect in their entirety the rates established by the Commission last August. Among them was the State of New York, which refused to sanction increases in passenger, sleeping car, baggage, and milk rates so far as they applied to intrastate traffic. The railways appealed to the Commission under the discrimination clause just described, and the Commission's decision, rendered about a month ago, which sustains the railways and orders the increases into effect, discloses a striking advance in federal encroachment beyond the position taken in the Shreveport case. In the latter case, the discrimination that the Commission forbade arose on a single railway which, under orders from the Texas Railroad Commission, charged less for an intrastate haul than it charged for an interstate haul for the same distance under rates prescribed by the Interstate Commerce Commis-

sion. The carrier was in the position of attempting to serve two masters. The interference by the state commission with the federal authority was direct. In the case just decided in New York there is no such direct interference. To be sure, there are many instances cited where the intrastate rate is lower than the interstate rate of a competitor for the same distance,—for example, in the passenger fare by different routes between New York and Buffalo,—but they apparently exercise only a minor influence upon the final decision. The carriers had offered no evidence before the New York Commission that such discriminations against interstate commerce prevailed, and the New York authorities had denied their application for an increase in rates solely on the ground of lack of evidence. Yet the Interstate Commerce Commission sustained the carriers and it did so primarily upon the ground of public policy. Congress had instructed the Commission so to increase rates as to enable the roads in each rate territory to earn 6 per cent upon the value of their property. The refusal of the State of New York to apply these increases in full to intrastate business deprived the roads in this district of $12,000,000 annually, and to that extent defeated the declared purpose of Congress. To quote from the decision in the Illinois case, rendered at the same time, "It was stated on argument that about thirty-one states had permitted the same increases in fares as we fixed in 'Increased Rates 1920.' Are the transportation facilities of these states and of the nation to be put in jeopardy by reason of the failure of the other states to conform to the plan adopted by the Congress for the welfare of the nation as a whole?"

As pointed out by Commissioner Eastman in his dissent, the effect of this decision is that whenever an increase in interstate rates on a comprehensive scale is made, a corresponding increase must be granted in intrastate rates, if discrimination against interstate commerce is to be avoided, and application by the carriers to the state commissions for authority to increase becomes only a matter of courtesy. The courts will have to pass upon this latest encroachment upon state prerogatives. If anything can be predicted from the tone of the court in recent decisions of this character, and from the entire spirit of this Act of 1920, the will of Congress and the federal power will be sustained, and we shall have well-nigh reached that goal which a sound regulating policy has long demanded—exclusive federal regulation of a federal public service.

Turning now to an examination of the railway system itself, what are the outstanding problems that the various managements are facing today? The first of these is financial. Has the Congress provided with sufficient liberality for the needs of the carriers? Are their earn-

ings now to be ample, and will they be able to obtain the credit essential for expansion?

If one were to form a judgment based entirely on the rate of return allowed, one would conclude that Congress has not been overgenerous in its treatment. A policy that allows the carriers a maximum of 6 per cent on their investment before dividing with the government, when the corporations must pay 7 per cent to 7½ per cent in the open market for new capital, and when, be it particularly noted, the government is charging the roads 6 per cent for loans, cannot be credited off-hand with extraordinary liberality.

The interest rate of 7 to 7½ per cent which railways in good standing are now compelled to pay for capital, is to be compared with a rate in 1914 of 4.36 per cent as estimated by Professor Kemmerer. Had the price paid for transportation risen proportionately, this increased interest rate would have been no burden, but everyone knows that it has not done so, and the money borrowed today buys not more than 40 to 50 per cent of what it bought in 1914. Moreover, the roads are compelled to borrow capital measured in dollars that are just now beginning with the fall of prices to increase in purchasing power. They are facing the necessity of continuing to pay high interest rates after the market rates have fallen, and of paying off the loan in dollars that have a purchasing power far in excess of the dollars they borrowed. This factor should deter them from contracting debt of long duration, if they must incur debt at all.

That the capital needs of the railways are acute is obvious, for the phenomenon of deferred investment is a familiar one in many fields. Miles of line constructed from 1914 to 1919 were less than in any five years since the Civil War. Since 1915 the additions to equipment have scarcely been sufficient to cover the requirements of a sound retirement policy. Capital needs in many other directions, such as yards and terminals, side and passing tracks, signal installations, and the like, will call for enormous sums in the not distant future. However, expansion of plant on any comprehensive scale is not likely to take place until there is a radical readjustment of credit conditions. Expenditure will be confined to what is absolutely essential for the movement of traffic. However, during the next three years more than $500,000,000 of maturities must be met. There is likely to be some fall in the interest rate, but how soon and how extensive and how rapid can only be surmised.

Whether the Act has created among investors the confidence needed to obtain capital cannot be determined until the effect of recent rate increases is more clearly in evidence. Congress provided that the railways in such rate territories as the Commission should prescribe should

earn a return until March 1, 1922, of 5½ per cent upon the fair value of their property, with ½ of 1 per cent additional at the discretion of the Commission, to be used for additions and betterments. The Commission has divided the country into four rate territories, the two in the East and South corresponding to the old classification territories, the western section being subdivided by breaking off a Mountain-Pacific group west of Colorado. As a basis for the determination of fair value of railway property, the Commission was instructed to utilize the results of its physical valuation so far as they were available, and to give to the property investment account of the carriers "only that consideration which under the law it is entitled to in establishing values for rate-making purposes." The carriers contended for the acceptance of the property investment accounts in their entirety, on the ground that such evidence as was available from completed valuations and those under way demonstrated that the fair value was actually in excess of the aggregate of the property investment. Doubtless the haste with which a decision had to be reached prevented the Commission from entering upon any elaborate investigation of this contention. At any rate, they give no explanation of the figure adopted by them as a fair valuation, beyond the statement that they have considered all the matters of record and the facts available. The book values claimed by the carriers as the proper basis amounted to about $20,000,000,000. The Commission fixed a value of $18,900,000,000, which reduced the claim of the eastern carriers by about 2½ per cent, the southern and western by over 8 per cent. To the eastern district the full 40 per cent increase in freight rates asked for was granted. The South requested 39 per cent and received 25 per cent. The West wanted 32 per cent and was given 35 per cent for the eastern half and 25 per cent for the western. Increases were also granted in passenger and Pullman fares. Will these increased rates produce the results required by law?

September was the first month under the new rates, and the first in which the roads were free from the governmental apron strings. The results were not satisfactory. They may be appreciated by comparing the actual figures with what would have been a normal result for the month of September during the three "test" years of 1915 to 1917. Computing the earnings to be derived by applying the statutory 6 per cent to the "fair value" fixed by the Commission, and dividing this aggregate among the months of the year in conformity with a normal seasonal distribution, Class I roads (those having $1,000,000 or more of annual operating revenues) should show for September a net operating income of nearly $110,000,000. The net for the month was actually $75,300,000. The biggest shortage was in the eastern district, where it amounted to over 50 per cent. Of course September of

this year was not a normal month. The wage increases granted to railway labor in July made retroactive to May 1, and amounting to an annual increase of $625,000,000, were an important factor; maintenance charges were heavy; much expected revenue was withheld through the refusal of the state regulating authorities to sanction all the increases made by the Interstate Commerce Commission. October will probably show a net operating income of approximately $40,000,000 less than is necessary to provide the 6 per cent required by law.

Moreover, net earnings are further threatened by the falling off in traffic. Part of this decline is seasonal and, so far as it is due to other causes, it may be short-lived. But it raises very definitely the question whether net earnings can be sustained and possibly enhanced by reductions in operating expense. It will therefore be enlightening to consider the elasticity of the main expense items.

There has been some fall in wholesale prices, but this has been largely confined to foodstuffs, clothing, and the like, and has not influenced materially the commodities that the railways buy in quantity. Coal contracts have largely been made, and a fall in prices cannot benefit the roads in the immediate future. As for labor, the item that constitutes over 60 per cent of the total railway expenditure, there is opportunity for economy only in increased efficiency or in the discharge of men, not in a lowering of wages. The recent increase in wages granted by the Railway Labor Board has been in effect scarcely six months, and it is idle to discuss actual decreases in wages for many months to come. As for the discharge of men, this can of course be done as traffic declines, (it has been done actually to some extent in the shops), but it is not at all likely that the saving through laying off labor can keep pace with the loss in earnings through decline in traffic. The only other source of labor saving is in greater labor efficiency. The morale of the men so seriously impaired during federal operation, is being gradually restored. The reintroduction of piece-work in the shops is strongly urged by the managers as an incentive to greater efficiency, but there is little probability of any immediate restoration of this method of wage payment.

So far as general operating efficiency is concerned, there is evident a serious purpose on the part of management and men to raise this to the highest possible standard. Faced by the necessity of making one locomotive or one car run when two ran before, they have inaugurated the drive for a load of thirty tons per car and a haul of thirty miles per day, and the reduction of unserviceable equipment to the lowest possible figure by a speeding up of repairs. The campaign has shown some gratifying results, but the results are not as significant as the public has been led to believe. The statistical comparisons are with

the month of February, the last month of federal operation. But the period from February to September shows the same kind of improvement in speed and loading in both years of government operation. It is more or less a seasonal phenomenon. Moreover, whatever results have been accomplished have had the aid of the shipper, and it is not at all unlikely that the shipper may weary in his well-doing if the equipment situation eases up.

However, this move on the part of the railways is encouraging, because the fundamental trouble in the equipment situation is not lack of equipment, but uneconomical handling. A careful analysis of the typical trip of a railway car reveals the astonishing fact that it is in motion on the road only about 10 per cent of the time. For over 20 per cent of the total trip it is held by the shipper, and for over 60 per cent of the time it is moving to or from loading tracks, passing through intermediate yards, making interchanges, or lying on the repair tracks. There is here much slack that should be taken up. Compulsory imposition of heavy demurrage and of increase in the minimum car-load, restriction of such privileges as reconsignment and free time, greater standardization in inspection and repair of equipment have all been advocated. Another and perhaps the greatest opportunity for increasing efficiency lies in the power situation. The railroads' power today costs about $2,000,000,000 per year, of which $650,000,000 is locomotive fuel. Every expert insists that the possibilities of economies in fuel saving and in more economical operation of locomotives are enormous, and are not realized as they should be even by railway men themselves.

Again, economies are possible on a large scale through the greater development of the principle of coöperation among railways. This war policy should be seized upon by the carriers and made their own. That the application of this principle by the government brought with it certain disadvantages under which railways as they recover their individuality are now suffering, may well be true, but the charge is rather against the necessary ruthlessness of war operation than against the fundamental principle of coöperation. And it is insisted here that if the railways are to satisfy the public and are to preserve their private character, they must take far more active steps than they have ever done in the past to promote this principle.

Much more might be done than at present in developing greater cooperation in the construction and operation of interchange and classification yards. It is an admitted fact in railway operation that the classification yard constitutes a most serious obstruction to rapid and efficient movement, that just to the degree that trains can be made up and run through to destination without break is the ideal of operating

efficiency attained. Yet at present the construction of classification yards is almost wholly a problem of the individual railway. In the new law the Commission is given power to require joint use of terminal facilities. The next step should be the coöperative construction and maintenance of classification yards by contiguous railways, in order to further to as great a degree as possible unbroken transit from origin to destination.

A more far-reaching plan for coöperation is involved in the consolidation movement. Under the new legislation the Commission is instructed to prepare and adopt a plan for the consolidation of the railways into a limited number of systems, which shall preserve competition and so far as possible existing channels of trade. The carriers will be permitted to consolidate under supervision of the Commission and in conformity with the Commission's scheme. This legislation doubtless had two motives: first, to take care of the financially weak road by making possible its absorption by a stronger rival; and, second, to promote coöperation in the use of plant and facilities by a more radical and thoroughgoing and definitive process than that of temporary agreement. The Commission's portion of the task is already under way in the hands of experts. However, unless Congress makes the plan compulsory, it is not likely to reach the practical stage for some time to come.

A final consideration in connection with the probability of reducing operating expenses is the present condition of maintenance. The federal administration always stoutly insisted that it was keeping up maintenance, and claimed at the end that it had complied with its contract and returned the roads to their owners in substantially as good condition as when received. With this position the railways have taken emphatic issue, and are preparing to submit to the government their claims for reimbursement. A comparison of maintenance expenditures by the railways during the three years previous to federal control with the period of government operation may throw some light upon the question. The average expenditure for maintenance of way during the three years 1915 to 1917 was 11.99 per cent of gross earnings and for maintenance of equipment 16.72 per cent. The corresponding percentages for the period of federal control were 14.11 per cent and 23.37 per cent. That is, expenditure for maintenance of way absorbed annually during federal operation 2.12 per cent more of gross earnings than the average of the previous three years, and maintenance of equipment absorbed 6.65 per cent more, and the gross earnings of the federal period were larger. But the weakness in this comparison lies in the fact that what is required by the contract is not an equivalent expenditure of funds, but the maintenance of service units. The period of fed-

eral operation was a period of constantly increasing prices and the question is simply whether the increased amount of expenditure for maintenance, measured in dollars, kept pace with the decline in the value of the dollar itself, or in other words with the increase in prices. The increase in prices during this period amounted to over 50 per cent, which means that the appropriations for maintenance would go less than half as far at the end of the period as at the beginning. Even assuming that the government had expended as much during its administration equated for advances in wages and material as was spent during the test period, which was not the case, there would still be the factor of diminished labor efficiency which would operate as a debit against the government.

There is then the large factor of deferred maintenance to be taken care of, and increased rather than diminished expenditures must be looked for for some time to come. Transportation should be ready for the traffic when it arrives, and nothing but a prolonged depression would warrant curtailment of this form of expense. Reintroduction of piece-work would reduce maintenance costs in respect to repair of equipment. If a restoration of this method of wage-payment proves impossible, it may well be that efficient management will require that this work be done by contract.

What conclusions may then be drawn from this discussion of the revenue and expense situation? In the first place, while the rates prescribed do not seem at first sight to give much play for decline in traffic, and while there is little opportunity for immediate relief from declining gross earnings through a shrinkage of expenses, the situation is not as gloomy as it appears on the surface. The valuation employed by the Commission as a basis for rates was nearly a billion and a half of dollars in excess of the par value of outstanding stocks and bonds, and the railways believe that the final valuation will be even higher. The Commission granted in almost their entirety the rate increases asked for by the roads, and these increases were figured to cover expenses estimated at the peak of the period of high prices, and to bring in a revenue based upon a traffic which at the time was subnormal. Unless we enter upon a period of general depression, there should be within a few months a gratifying showing in gross earnings. While expenses cannot be immediately reduced, the opportunities for economics through more scientific operation lie before the railways. Until they have taken advantage of these opportunities to the full they cannot in reason ask for further increases in rates.

A word in conclusion concerning the labor situation. There is no doubt whatever that the war period produced a distinct decline in the morale of the working force, from the standpoint of its efficiency as

an organized unit on the individual railway. This has no reference to the dilution of labor due to war's demands, but rather to the attitude of labor towards its executive officers. This decline had begun before the war, with the passage of the Adamson Act. Its explanation is found in what might be called the "Washington habit." Centralization during the war developed it rapidly, with the result that the employee went over the head of his superior officer and took the train for the Capitol upon the slightest pretext. Wages, working conditions, questions of discipline, all were settled in the Director-General's office. Moreover, standardization was made well-nigh complete, so that the same class of employees received the same pay irrespective of local conditions and differing costs of living. This meant a strengthening of the national unions, an increase in the prestige of their leaders, and the extension of unionism and collective bargaining among classes of employees and systems of railway in which it was before unknown.

In the legislation of this year, labor leaders wished to perpetuate the war agencies for the adjustment of disputes, the national bipartisan adjustment boards. Railway managers urged decentralization and the restoration of adjustment machinery on the individual road. The law left the matter in a somewhat vague and unsatisfactory condition. It was declared to be the duty of carriers and employees to exert every reasonable effort and adopt every available means to avoid interruption of operation, and disputes were to be considered and if possible decided in conference of those directly interested. Voluntary adjustment boards could be established by agreement between an individual carrier, a group of carriers, or the carriers as a whole, and the employees concerned, to which disputes involving working conditions, not settled by direct conference on the individual railway, could be sent. Appeal from these adjustment boards could be taken to the Railroad Labor Board, a body with national jurisdiction consisting of representatives of the employees, the railways, and the public. This Board had direct jurisdiction of any dispute over wages not adjusted locally. But it also could take original jurisdiction over disputes involving rules and working conditions in case the appropriate adjustment boards were not organized. It is only necessary therefore that the union leaders should decline to coöperate in the appointment of adjustment boards, and sooner or later the national board must take action. In fact, the national body has already called the attention of the two sides to this possible outcome. Meanwhile, because no adjustment machinery exists, the unions have succeeded in getting a multitude of petty cases of discipline before the national board, and are charged with doing this for the purpose of impressing the Board with the necessity of creating some national machinery to handle these disputes. They have followed this

up by an express request that national adjustment boards be established to take the place of the war boards which expire February 1, 1921; but the Railroad Labor Board has declined to act for lack of jurisdiction, holding that it has authority only over disputes. Brotherhood leaders have secured the continuance until after further hearings of all the national agreements of the United States Railroad Administration, which include such matters as the eight-hour day and the abolition of piece-work in the shops.

While on the surface the struggle appears to be a somewhat technical question of jurisdiction, it has far-reaching consequences. Railway executives insist that national adjustment means a breakdown of discipline, of *esprit de corps*, of direct contact between manager and men, resulting in reduced efficiency and safety in operation. It means the perpetuation of national standards without regard to local conditions. The more extreme among them maintain that this is a movement for the closed shop, and that the ultimate purpose is one national union in railway employment. It is evident that the denunciation of the "one big union" idea is but a part of the general campaign for the open shop which employers are now undertaking, and need not be taken seriously. Nevertheless one must recognize the avowed object of the brotherhood leaders to preserve standardization on a national scale, and to concentrate the machinery of adjustment in national bodies.

It is evidently the judgment of the labor leaders that they can accomplish more through bipartisan boards than through the tripartite arrangement in which the public is represented. I confess to a strong predilection in favor of a plan in which representatives of the two sides get together and settle their problems without the intervention of a third party. But I cannot make myself believe that, in issues so vital and far-reaching, there will not under such a plan at some time be collusion between them at the expense of the public. The duty placed upon the Commission to see to it that the railways receive a definite net earning seems to me to increase the danger of collusion.

But certainly if the tripartite plan of settlement is to prevail, the weakness present in earlier arbitration boards must be corrected. Men must be chosen to represent the public who have the capacity to gain a thorough understanding of the intricacies of railway wage schedules, and must be continued in service so that they may acquire the efficiency that comes only from experience.

The present board has no power to enforce its decisions beyond that of making violations thereof public. The Cummins Act, as originally drawn up, provided for the compulsory arbitration of labor controversies, and forbade employees to enter into a combination with the intent to hinder or prevent the operation of trains in interstate com-

merce. Fortunately it failed of passage. Everyone recognizes the necessity for uninterrupted transportation. The utter dependence of the public makes it impossible to confine the interference of the people to assuring the contestants a free field and fair play. There is no question but that both capital and labor should be required to accept service in this industry subject to a limitation upon their freedom of action in the settlement of their disputes. But it is quite a different thing suddenly to incorporate the principle of compulsory arbitration into law, and impose it upon a group of employees just emerging from the restrictions of government employment into which they were drafted for war purposes, a group long in service with many valuable seniority rights, and in large degree unfitted by age and service to seek an alternative employment. But the public should give warning in some unmistakable fashion that settlement of disputes in public service industries must be accomplished by peaceful means, and that labor must prepare itself for a speedy realization of this program. This involves the obligation on the part of the public to create a tribunal in which the administration of justice is assured. It involves the establishment by law of certain fundamental rights of labor, which might be called a labor code. A beginning has been made in the instructions laid down by Congress for the guidance of the Railroad Labor Board in the fixing of wages, considerations which the Board is required to take into account when determining the reasonableness of wages and working conditions. With the fundamental rights of labor assured, and with an informed and high-minded arbitration body in existence, there should be no more difficulty in adjusting labor disputes peaceably than there is in the settlement of ordinary cases at law. With such a tribunal, the argument of involuntary servitude, whatever slight plausibility it may have had before, falls to the ground.

In conclusion permit me to offer two general observations. First, private ownership under government regulation is again on trial. The one thing that will satisfy the people of the country is the complete recognition in deed as well as word that the railway is a public servant. This insistence pervades the recent legislation. Private interests are put one side for a larger and more imperative need. Private capital has little now to gain from pursuit of the methods of competitive business. Its earnings are limited, its range of activity restricted. This should give stimulus to a movement for a larger measure of coöperation among the railways, and the perpetuation of those advantages that developed under the unified control of the war period. There is much evidence that railway executives appreciate this change of status, and that they are prepared to subordinate the selfish interests of their own properties to the larger interests of the public as a whole. We are

attempting to take a middle ground between public ownership and unrestricted private operation, a position in which the public becomes a partner in the enterprise. Whether this final experiment will succeed will depend upon the cordiality with which public and carriers cooperate to achieve a common purpose.

Second, we have reached a stage in our policy of regulation where we may well pause and take account of stock. We have gone a long way and rapidly in the direction of inquisitorial supervision. To be sure, the government now has a large stake in the enterprise, having over a billion dollars of investment in railway property in the form of loans. Yet there is a point in the regulation process that represents a fair balance between the private agency that furnishes the capital and the management, and the public which asserts control over rates and service. If we insist upon carrying our paternalism and our discipline to the point where private capital will rebel, where private initiative will be deadened, where the net result of the association of private capital and government management will be a decline in the standard of service produced, we must either draw back or be prepared to accept the alternative, however disagreeable, and undertake the responsibility of public ownership and public operation.

## THE RAILROAD SITUATION—DISCUSSION

C. O. Ruggles.—In the discussion of Professor Dixon's paper I wish to call attention especially to what he has called the altered relationship of the Interstate Commerce Commission to the service of transportation. And in this connection it is highly significant to point out that the Commission is responsible to the carriers for the net earnings and to the public for an efficient and sufficient transportation service.

There does not appear to be any doubt that we have reached a point where railroads will not be permitted to receive a rate of return on capital comparable to what it will be able to earn in competitive industry. Therefore if we are to take no backward step on this proposition, the only possible consistent program is to move forward and provide for a certain return to carriers. If we are to say to carriers when they are prosperous, as we did about 1906, that rates to the public ought to be reduced, we must be prepared to permit an increase in their rates when railroad revenue is inadequate. If an increase in rates, at such times, coincides in the business cycle with such depression in business that increased revenue will not be produced by advances in the rate schedule, then there is but one solution, and that is a payment to the carriers from a revolving fund administered by the government. Of course this assumes that the government might desire during periods of ample railway revenue to divert part of this revenue into such a fund to be used as a shock absorber during periods of business depression.

The weak link in having the Interstate Commerce Commission assume responsibility for a return to carriers is the danger of relieving railroad management of the responsibility of handling the properties economically.

While it would be rash to predict what will be the outcome of this experiment, it is evident that it will be easier to determine whether a road is in need of more capital because of inefficient management or because of inadequate rates than it would have been before provision had been made for uniform and somewhat detailed accounting.

In considering whether capital has been put in a straight-jacket and robbed of its initiative, it is well to keep in mind the fact that, although the zone is a very narrow one, still the law is so framed that the return, which is to be assured to the carriers, is based upon the aggregate valuation of all the roads within a certain region, and is in no sense an assured return to any individual road. Moreover, it may not be out of place to point out that there are various classes of persons with capital to invest. There are those satisfied with nothing but a very high return, while at the other extreme there are others who consider safety of the investment first and rate of return as of secondary importance. In our early history, and before any regulation of carrier accounts, railways were in that group where both great gains and great losses were possible. In other words, carriers were in the speculative group. If now government regulation is to assure the railroads against losses, it would appear that that class of investors who desire safety of their investments as of prime importance would be willing to purchase railway securities.

If the new law requires the Interstate Commerce Commission to give more attention to progressing railway service it will fill a long felt need. Study of this phase of the subject will convince one that we should have had thoroughgoing regulation of railway service at least twenty years ago. It may be true that we are likely to have agitation for government ownership and regulation as a result of putting private capital in a straight-jacket, but it is more probable that there will be a demand for government ownership and operation as a result of a breakdown in railway service. Railway service touches the public in a vital way, and disgust on the part of the general public as a result of unsatisfactory railway service would be much more likely to bring government ownership of railroads than would dissatisfaction on the part of investors because of limited railway earnings.

In framing a program of regulation which will insure to the public efficient and sufficient railway service, we must recognize the fact that we cannot longer permit the control over the distribution of railway equipment to remain in the hands of the carriers. Our large area and our marked geographical division of labor make this problem more vital than it is in other countries. While the Transportation Act of 1920 gives control over the distribution of equipment to the Interstate Commerce Commission whenever conditions reach such a stage that interference is deemed necessary, it is a question whether we shall not need to go to the length of eliminating individual railway ownership of railway equipment. Equipment companies could be organized covering the areas into which the Interstate Commerce Commission will group the carriers for purposes of determining rate of return. In addition to these regional boards there should be a central board of control of railway equipment for the entire country. There should be appointed on these boards men familiar with the railway business, and they should be given very long terms and liberal salaries, and thus relieved of their railway company connections. On these boards would, of course, be representatives of the Interstate Commerce Commission or of the govern-

ment. The strength of such a plan is in the elimination of individual railway system control over equipment. The equipment companies would have no interest in serving one railroad system over another or one locality of the United States over another. Hence there would be a more equitable distribution of railway equipment as between what may be called the "one and two-way" shipping groups. Those sections which produce raw materials would thus secure a more equitable share of railway equipment. Coal mines, which also belong to the "one-way" shipping group, would not be sacrificed to big industrial concerns that get many cars in under load and appropriate them as they are made empty; and mine operators would not find it necessary to sign unfavorable contracts for railroad fuel in order to feel that they can secure an adequate car supply.

One other very important change in private ownership and operation of carriers must be made or there will undoubtedly be a growing demand for government ownership. I refer to the very unsatisfactory railway service at terminals. It happens too that government ownership would be especially unsatisfactory in this very feature of our railway service. If we had government ownership and control of carriers, the amount of traffic which would pass through the port of New York as compared with New Orleans would be determined in the same manner that river and harbor appropriations are made at present. The shipping public will never be able to get the service to which it is entitled so long as we continue individual railway control of terminal facilities. An examination of railway terminal tariffs will show that railways use these railway terminal facilities in such a manner as to encourage shippers to give the line haul to the road owning such terminal facilities and to discourage routing traffic over other lines. Indeed it is not uncommon for a carrier to state in its terminal tariffs that it reserves its terminal facilities for its own use except upon such terms as it may see fit to grant. And it has been held by the Interstate Commerce Commission and by the courts in cases involving joint rating that one carrier may not be compelled to make certain joint tariffs if it means in effect the opening of all its terminal facilities to the use of a competitive road. There has not been sufficient appreciation on the part of the public of the significance of the lack of coördination on the part of the carriers in the use of terminal facilities. Naturally some carriers occupy strategic positions in terminals because historically they were the first to enter. A map of most of our terminals will show too that they have usually located within terminals in such a way as to make it difficult for other carriers to secure favorable locations. It is evident that terminal congestion which may result from the fact that the facilities of one carrier are used beyond capacity means increased earnings to the carrier on which congestion occurs, for as the freight is moved the carrier receives its revenue. From the standpoint of the public, however, it is desirable to have all the terminal facilities used as a unit. Individual carriers through eminent domain have been able to take certain property for common carrier use. It is now time to apply eminent domain to individual railroad property in terminals, and to demand that all terminal facilities be owned and controlled by a separate terminal corporation, which in turn would serve all carriers on equal terms. Such a plan would mean that all railroads reaching a terminal would have the advantage of whatever terminal facilities were provided in that terminal. If some carriers lose by such a reörganization of private ownership, the public would

gain. The justification of individual railway system gain at the expense of the public will be increasingly difficult as the public appreciates that the inefficiency in the physical coördination of railroads in terminals is at the bottom of many of the difficulties in the way of securing efficient railway service. Congestion in Atlantic terminals may mean embargoes on freight in Denver. Physical coördination and unification of all terminal facilities in our important terminals would amount to an important addition to the transportation facilities of this country. And indeed about the only way to bring about an increase in most of our terminal facilities is through effective coördination and more intensive use. Geographical conditions and the rapid growth of cities about transportation centers in our important cities often limit extensive development of terminal facilities. Hence the significance of unification and intensive development.

The Interstate Commerce Commission very properly emphasizes the importance of increasing federal control over carriers. This Commission must control railroad rates if it is to be held responsible for securing an adequate revenue to carriers. It is also important that state control of railway service be curtailed. If Connecticut, for example, grants shippers four days free time in which to unload carload freight, whereas in Minnesota but two days are allowed, it means a discrimination in favor of Connecticut shippers. Likewise if a state sets a low carload minima it may mean lower freight rates to industries in that state, but it also means that shippers in that state will absorb more than a fair share of railway equipment.

It makes no difference, therefore, whether inefficiency in the use of the railway plant results from the action of individual railway systems in the unfair appropriation of railway equipment, or from a restriction in the use of terminal facilities to its own advantage, or whether the same results are produced by a state that passes laws favorable to its own interests, the effect upon the public is the same.

If this reasoning is sound, we ought to have such a modification of private ownership as will make it reasonable to expect that each corporation engaged in furnishing transportation will find it to its own interest to secure the maximum coördination in the use of all transportation facilities. The organization of separate equipment corporations that would own railway equipment would bring about a more equitable distribution of this equipment. The organization of separate terminal corporations that would own all railway terminal facilities would open to all carriers alike the use of all terminal facilities. The physical coördination which would thus be possible would mean much more efficient railway service. Finally, the curtailment of regulation by the various states would prevent the inequalities that result from both rate schedules and service regulations. Such changes would materially improve the quality of railway service, and, if carried out in a vigorous manner, would postpone if not eliminate the demand for government ownership.

# THE FOREIGN TRADE BALANCE OF THE UNITED STATES SINCE THE ARMISTICE

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## I. Our International Position at the Close of the War

I believe that our problems in foreign trade cannot be satisfactorily analyzed by reference merely to our current situation. I hope I shall be pardoned, therefore, for recalling at the outset some familiar facts of our earlier experience. From the crisis of 1873 to the outbreak of the war our balance of trade had been moderately favorable, the excess of exports representing in the early years chiefly the growing interest payments on foreign capital previously invested in our railroads and other enterprises. Beginning in the late nineties our trade balance showed a marked and sustained increase, representing in addition to interest payments the notable growth in the expenditures of our tourists abroad and in the remittances of our rapidly growing immigrant population. Down to the war, however, our favorable balance had been of modest proportions, averaging about $487,000,000 a year in the period 1896-1914, and representing, as nearly as can be stated, net interest payments of about $160,000,000, tourists' expenditures of $150,000,000, immigrants' remittances of about $150,000,000, and a number of minor debit items, of which payment for ocean carriage was the chief.

Then came the World War, bringing a series of changes which, though in many respects clearly foreshadowed in the two decades preceding the war, came so rapidly and spectacularly and on so gigantic a scale as to make foreign trade one of our major economic problems. The main features of our war-time balance of trade can be briefly sketched. Exports in four and a half years totalled $22,974,000,000 and imports $11,166,000,000. Our excess of exports, owing to war-time needs for our products at rapidly rising prices, coupled with Europe's inability to export as before, reached the huge total of $11,808,000,000. This balance was financed mainly by the export of American capital, in the form of public and private loans to foreign countries and of American securities returned to this side in connection with the operations of exchange stabilization. Other items were of course present, notably the large net inflow of gold, which amounted to $1,029,000,000, but all of these items were of minor importance compared with the movement of capital and of goods. The total net export of capital, as nearly as it can be stated, was distributed as follows:

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|---|---|
| Securities returned from Europe | $2,000,000,000 |
| Private foreign bond issues | 1,520,100,000 |
| Advances by the United States government under credits established in favor of allied governments | 7,319,500,000 |
| Total | $10,839,600,000[1] |

As this huge outgo of American capital continued it was seen that the eventual outcome must be the conversion of the United States from the debtor to the creditor position in international trade. Indeed, before the war had ended, it was being assumed in many quarters that this fundamental change had already occurred; and that what in other countries had come only very gradually, as the result of slowly accumulating foreign investments, combined perhaps, as in the case of Great Britain, with a steadily growing merchant marine and other sources of income from abroad, had taken place in the United States under the pressure of an unprecedented war in about four years time. Since our prewar debit balance had been paid by an excess of exports, the logical implication was that the new net credit balance would induce an excess of imports; that there would very shortly be an overturn of our trade balance comparable with that of 1873.

The study undertaken by the *Review of Economic Statistics* in the spring of 1919,[2] however, indicated, I believe, that at the close of the war period our new creditor position had not yet been clearly achieved. An important change had taken place in our capital and interest account. A net outward payment of about $160,000,000 a year had been supplanted by a net inward payment of about $525,000,000, provided that Europe were able to assume at once so heavy a charge. Even assuming full payment of interest, however, it was still doubtful whether at that time our balance would show a net sum receivable. The item of freight payments, by reason of our merchant marine expansion, had apparently passed out of our debit column, but was still too small to exert much effect on the balance. Much more important were immigrants' remittances and tourists' expenditures. Even if taken at a moderate prewar estimate, about $300,000,000 a year when combined, they reduced our new credit balance to about $200,000,000.[3] And it was generally conceded that immigrants' remittances had greatly increased, and that tourists' expenditures, which had virtually ceased during the war, might be expected to revive strongly after a time.

More important than these, however, were the further changes likely to occur in our international capital and interest account. Could

[1] The *Review of Economic Statistics*, July, 1919, p. 305.

[2] C. J. Bullock, J. H. Williams, and R. S. Tucker, "The Balance of Trade of the United States," July, 1919.

[3] The *Review of Economic Statistics*, July, 1919, p. 253.

Europe soon assume her interest obligations? Even assuming that she could, was it not likely that for some years the net movement of capital would be from the United States, rather than toward it? A moderate outflow of foreign investment would still suffice, when added to the other items mentioned, to offset the annual inflow on interest account, and thus to postpone the overturn of the trade balance. Eventually, the growing interest charge would become so large as to exceed the sum of new annual investments, tourists' expenditures, and immigrants' remittances; but that result would show itself only after some years. On the basis of the data then available it was concluded that, although it was not possible to predict with safety whether the overturn of our trade balance would come after two years or not for a decade, it was certain that in view of Europe's continued extreme need of our products and our loans, our excess of exports could not be expected to disappear so rapidly as had been generally assumed.

## II. Our Balance of Trade Since the Armistice

In the two years that have passed since the armistice that conclusion has been justified. The transition from war conditions has been very gradual. Except for Great Britain, Europe's recovery has been slow, though in the past year there have been a number of hopeful signs. Except in Great Britain, budgetary deficits are still the rule; taxation runs behind current expenditure. The German indemnity remains unsettled. The basis of international trade with Europe is still inconvertible paper; paper issues have continued to be multiplied; the ratio of gold holdings to bank liabilities has grown smaller; and the gold embargoes, though relaxed by Great Britain, have elsewhere been consistently maintained. The foreign exchanges, following the unpegging of sterling in March, 1919, and the discontinuance of the credit advances by our government in June, 1919, declined rapidly, reaching their low mark in February, 1920. The recovery which followed was only moderate, and this past fall a downward movement again set in. The dollar, which in war time had been at a discount in many neutral countries, though at a premium in the warring countries, has gone to a premium virtually throughout the world. With the removal of our embargo on gold in June, 1919, gold has been moving to settle our adverse balances with the neutral countries, but has not moved from the belligerent countries to us on a comparable scale, so that we have witnessed the seeming paradox of a nation with the largest favorable trade balance that has ever existed in any country experiencing at the same time a heavy net outflow of gold, the net export to November 1, 1920, being $260,000,000.

Of chief importance as regards their effect on our balance since the armistice have been the changes in our international capital and interest account. The payments of interest on the huge sum of government credit advances have been suspended. The cash advances (less repayments) under these credits now (November 15, 1920) amount to $9,466,283,170. Last April announcement was made that interest payments on the government credits would be payable in funding bonds for three years; and that the funding plan would extend to back interest and also to the obligations of foreign governments for purchases of our war supplies. These obligations at the close of the fiscal year 1920 amounted to $563,032,739.63. Adding back interest, then, which now amounts to about $800,000,000,[4] we have a present total of about $10,814,000,000 of government credit items, on which the annual interest payments at 5 per cent would be $541,000,000.

An analysis of our balance of payments for the calendar year 1919[5] indicated what would be the effect of the funding of these interest payments. Excluding new capital loans and repayments, it was shown that so long as these government interest items remained unpaid in cash or its equivalent, our balance on invisible items would still show a net debit, the annual payments for immigrants' remittances and tourists' expenditures exceeding the annual receipts of interest payments on private capital invested abroad and freight payments for the services of our expanded merchant marine by some $200,000,000 a year. And it is worth noting that in this computation tourists' expenditures were taken at only $50,000,000 a year, whereas the lowest authoritative estimates of this item in the prewar period put it at not less than $150,000,000 a year.

It is apparent, therefore, that so long as the interest on government credits remains unpaid, except in funding bonds, there is every likelihood that we shall continue to have a net balance of indebtedness, and a continuation of our excess of exports, though of reduced amount compared with the huge balances of recent years. As to how long this suspension of interest payments will continue thus to affect our trade balance, no definite answer can yet be given. Secretary Houston's latest announcement is that the funding arrangement has not yet been settled but is still in the stage of discussion; and that the Treasury's proposal is to fund the interest merely for two or three years from the spring of 1919, when interest payments ceased. If this is done, it will mean that our excess of exports, so far as due to the suspension of interest payments, would continue until the spring of 1921 or 1922, ac-

[4] To January 1, 1920, $324,212,000 (see Frank A. Vanderlip and John H. Williams, "The Future of our Foreign Trade," p. 36); for the year 1920 about $473,000,000.

[5] "The Future of Our Foreign Trade," p. 37.

cording to the period to be covered by the funding plan. Whether the interest payments will in fact be resumed so soon as here indicated must depend, of course, upon the rapidity of Europe's recovery from the effects of the war. It would seem certain, however, that Great Britain could resume at that time, and it is therefore worthy of note that of the total government credits to finance exports Great Britain still has $4,196,818,538.44 (December 1, 1920), or 44 per cent of the whole.

It is not predicted, however, that our excess of exports will necessarily disappear *immediately* upon the resumption of these interest payments, or that our balance of trade will be dominated forthwith by the separate effect of this single factor. Much will depend, of course, upon the extent and rapidity of Europe's recovery. She may continue for a time still to need our goods beyond her capacity to pay with goods, gold, or securities, and to shift the burden of payment for the excess upon our bankers and exporters. A resumption of these huge interest payments, however, would be the best evidence yet apparent of a substantial recovery in Europe.

A factor of at least equal importance with the question of interest payments during the immediate future will be that of new foreign investments of American capital abroad. Whether this stream of foreign investment is to occur, on a scale sufficient to offset the annual interest payments on our capital, public and private, already so invested, and also to offset maturing bond issues and repayments of capital on government credits, is today the question of supreme importance. Its significance is many sided. It has a bearing not only upon the question of fact here raised—as to whether, and when, our balance of trade is to be overturned—but also upon the condition of our exporters and their bankers, now burdened with short-time credits extended to foreign buyers of our products; upon the character, extent, and direction of our foreign trade, in both exports and imports; and upon the future importance of the United States as an international money market.

To understand adequately the importance of the consequences now hinging upon foreign investment of American capital, it is necessary to examine in some detail the state of our trade balance since the armistice and the means whereby it has been financed. From November 1, 1918, to November 1, 1920, our exports exceeded our imports by $6,782,000,000, or by about a billion dollars more than during the last two years of the war. Both exports and imports have shown a large increase in the value figures. Exports for the two years to November 1, 1920, were $15,841,000,000, or over three billion dollars larger than in the last two years of the war; and imports amounted to $9,059,000,000, which is only 17 per cent less than the combined imports of the

entire war period. Total value of exports has so far shown no tendency to diminish. In 1919 it was 29 per cent greater than in 1918, and in the first ten months of 1920 it was 5 per cent greater than in the same period of 1919. Imports in 1919 were 22 per cent more than in 1918, and in the first ten months of 1920 they were 52 per cent greater than in the corresponding months of 1919. Until the recent harvest season, therefore, when exports experienced the usual seasonal expansion and imports fell off by reason of falling prices in the raw material markets and the industrial depression attendant upon our own falling price level, imports were increasing much faster than exports and were rapidly filling up the gap between the two. Yet for the whole period, so marked had been the expansion of exports in 1919, exports exceeded imports by a greater figure than in any equal period of our history.

It is important to remember that this remarkable expansion of our foreign trade since the armistice has been much more in the value figures than in the quantity figures. Mr. W. A. Berridge, in the *Review of Economic Statistics* for October, 1919, showed that in the fiscal year 1919 physical volume of exports was only 40 per cent in excess of the 1911-14 average, whereas export prices had advanced 127 per cent and the total value of exports 317 per cent. Compared with the 1915-18 average, physical volume of exports in the fiscal year 1919 showed an actual decline of 2.8 per cent, whereas export prices advanced 52 per cent and total value of exports 48 per cent. Since 1915 (and until the present price recession) export prices have been consistently higher than domestic prices, the excess reaching more than 10 per cent in the fiscal year 1919. The foreign trade index of the *Federal Reserve Bulletin* for November, 1920, shows that with price changes eliminated the monthly average value of exports in the calendar year 1919 (which on this basis is an index of physical volume of exports) was only 18.6 per cent greater than that for 1913; and that in the first nine months of 1920 the monthly average was only 3.2 per cent higher than in 1913. Quantity of exports has thus declined 14 per cent since 1919, and this year has been but little more than before the war. Quantity of imports shows a striking contrast. The monthly average quantity imported in 1919 was 71.7 per cent greater than that of 1913; and the monthly average for the first nine months of 1920 was 92.2 per cent greater than that of 1913.[6]

[6] It must be admitted that the indices of the *Federal Reserve Bulletin* are not so comprehensive as could be wished. They include 29 leading exports which in 1913 formed 56.3 per cent of the total export values, and 25 leading imports which in 1913 were 47.7 per cent of the total import values. Yet the commodities included are representative, and the proportions of the whole which they form are considerable.

Here is striking refutation of the contention of those who hold that our foreign trade since the armistice has represented the supplying of foreign markets with our products at the expense of the home market; that our large export balances have drained our markets of goods, induced the holding back of goods, intensified speculation, and have thereby raised our prices at home. It is clear that, on the contrary, our foreign trade since the armistice has increased the proportion of the world's production being supplied to the domestic market.

This statement of quantity of trade does not, of course, alter the fact that our export balance since the armistice has been unsoundly financed, and that the resultant expansion of bank credit has probably been one important factor in the continued rise of prices which reached its peak in May, 1920. To the extent that this is the case, it would appear to support the quantity theory of money; and it is, therefore, interesting to note the paradoxical fact that among the economists who in recent months have been most prominent in calling our attention to the expansion of bank credit occasioned by our recent methods of financing foreign trade, has been one of the most vigorous credits of the quantity theory.

### III. Our Trade Balance Has Been Financed by Bankers' Credits

As has been said, however, the value figures of trade since the armistice show an excess of exports amounting (to November 1, 1920) to $6,782,000,000, the largest in our history. Here is striking proof of Europe's continued inability to buy goods with goods. Since the middle of 1919 this condition has given rise to a new and very serious problem. In June, 1919, the government withdrew from the field of export financing.[7] Since that time the burden of supplying Europe with our exports has fallen chiefly upon our bankers and exporters, in the form of short-time extensions of credit.

The part played by long-time investment since the armistice has been small in comparison. Since the beginning of 1919, new foreign bond issues have been fully offset by maturing issues, the total figures to November 1, 1920, being $897,000,000 of new issues (government, municipal, and corporate) against $1,086,000,000 of foreign loans matured.[8] Foreign bond issues have not, however, represented the total outgo of American capital during the period. They do not include extensions of old plants abroad and establishment of new ones by American corporations, the purchase by American concerns of lands, mines,

[7] The government credit advances virtually ceased at that time, though some small advances of cash under credits previously granted have since been made. Also, the War Finance Corporation was continued down to the spring of 1920. But credit advances by the latter were small.

[8] The detailed figures, furnished by J. P. Morgan & Co., not here reproduced.

and factories in Canada, docks in Hamburg, sugar mills and plantations in Cuba, new oil fields in Venezuela and Colombia, or new packing plants in Brazil. All observers agree that investments of this sort have been considerable, particularly in the case of Canada. The total of these investments in 1919 was estimated to be not less than $300,000,000, and for the whole period down to November 1, 1920, half a billion dollars would be a conservative figure. Including these investments and also American purchases of European internal securities and the return of American securities from Europe (figures for which are given in the accompanying balance sheet), our total foreign investment since the beginning of 1919 has been about $1,649,000,000, or about $563,000,000 in excess of loans matured and paid off.[9]

That balance has been financed, as we have said, by bankers' credits. The estimates that have been made of these short-time credits have shown wide variation, and for the most part, I believe, have been exaggerated. In February and March, 1920, while investigating our balance for 1919, I received estimates ranging from $500,000,000, to $5,000,000,000. My own computation for 1919 showed short-time credits of $1,307,000,000.[10] Much larger it could not have been, for the phenomenal export balance of the first half of the year ($2,448,000,000) was fully covered by the government credit advances, which amounted (inclusive of all relevant items) to $2,665,000,000,[11] virtually the whole

[9] Moreover, some authorities have raised the question whether these matured bond issues have in fact been fully paid off in every case. The most important item was the Anglo-French loan, which fell due October 15, 1920. The French half was met in part by a new loan of $100,000,000, leaving $400,000,000 payable. The *Federal Reserve Bulletin* for November (p. 1129) questions whether this sum was paid off by the accumulation of dollar balances through purchase of exchange, or was met by the sale of foreign securities in this market. It states that when analyzed the operation appears "to have amounted largely to a mere shifting of credits," the French and British governments paying off the loan with foreign-held American securities. The importance of this statement does not need explaining. To the extent that maturing loans have been paid off with funds realized in this manner, they represent not an offset to new foreign bond issues in this market but an addition to them. To take only the Anglo-French loan (*i.e.*, $400,000,000, excluding the $100,000,000 new French loan), it would mean that new foreign investments in the past two years have contributed to the financing of the trade balance not half a billion, as we have stated, but about $1,400,000,000. In other words, the current estimates of bankers' credits to finance exports would be reduced by $800,000,000. In the absence of detailed data on transactions of this sort, however, we must continue to count maturing bond issues as European payments in our balance sheet. On this basis, the net foreign investments of American capital since the armistice have been comparatively small, entirely inadequate to finance our one-sided balance of trade.

[10] "The Future of Our Foreign Trade," p. 32.

[11] See "The Future of Our Foreign Trade," *The Review of Economic Statistics*, April, 1920, p. 32. The same figures are given in the *Chase Economic Bulletin*, October 5, 1920, p. 29.

of which was advanced in the first half of the year. The trade balance of the second half of the year was but $1,568,000,000. In 1920, Europe's unfunded debt to us has undoubtedly increased markedly; and of late months the total since the armistice has been most frequently estimated at from three to four billion dollars. I shall not attempt to read the details of the accompanying balance sheet. It shows that between January 1, 1919, and November 1, 1920, the United States piled up a surplus of credits not otherwise accounted for of $2,852,000,000. This figure of $2,852,000,000 is put forth merely as preliminary, subject to revision in my analysis of the balance of payments for the calendar year 1920, which will appear in a forthcoming issue of *The Review of Economic Statistics*. It is not improbable that further investigation will show that floating credits outstanding on November 1, 1920, were somewhat less than the figure indicated by the table, and probably did not exceed $2,500,000,000.

THE BALANCE OF INTERNATIONAL PAYMENTS OF THE UNITED STATES, JANUARY 1, 1919, TO NOVEMBER 1, 1920[12]
(Units of $1,000,000)

| | | *Credit* | *Debit* |
|---|---|---|---|
| 1. | Exports of Merchandise and Silver | $15,098 | |
| 2. | Exports of Gold | 653 | |
| 3. | Foreign Loans matured and paid off | 1,086 | |
| 4. | Freight Payments payable to United States and Sale of Ships | 1,011 | |
| 5. | Interest Payments on Government Credits to Allied Governments | 177 | |
| 6. | Interest Payments on Private American Capital Abroad | 311 | |
| 1. | Imports of Merchandise and Silver | | 8,765 |
| 2. | Imports of Gold | | 393 |
| 3. | Gold held by Bank of England for Federal Reserve Banks | | none |
| 4. | New issues of Foreign Government, Provincial and Municipal Loans | | 771 |
| 5. | Foreign Corporate Bond Issues | | 126 |
| 6. | American Securities Returned | | 200 |
| 7. | American Purchases of European Internal Securities | | 155 |
| 8. | Other Foreign Private Investment | | 500 |
| 9. | Net sum of U. S. Government Cash Advances under Credits Established in Favor of Foreign Governments | | 2,131 |
| 10. | U. S. Government Purchases of European Currencies to Cover Expenditures in Europe | | 559 |
| 11. | Relief | | 84 |
| 12. | Interest Payments on Foreign Capital in the United States | | 100 |
| 13. | Freight Payments Payable on Imports Carried in Foreign Vessels | | 890 |
| 14. | Credits Granted by U. S. Grain Corporation | | 60 |
| 15. | Immigrants' Remittances | | 600 |
| 16. | Tourists' Expenditures | | 150 |
| | TOTALS | $18,336 | $15,484 |
| | | 15,484 | |
| | NET CREDIT BALANCE | $ 2,852 | |

[12] For sources of data and methods of computation, see *The Review of Economic Statistics*, July, 1919 and April, 1920.

The estimate of short-time credits here given differs considerably from that of Dr. B. M. Anderson, Jr., in the Chase Bank Bulletin of last October. Dr. Anderson finds the total of European unfunded indebtedness to us on September 15, 1920, to be $8,500,000,000. Allowing for our increased export balances since that date, his total on November 1 would be not less than $4,000,000,000, or over a billion dollars more than that here stated. This difference is due mainly to the fact that my balance is based upon our relations with the world as a whole, whereas Dr. Anderson's is based solely upon our relations with Europe, his view being that war conditions and the poverty of the warring nations have forced them to pile up an unfunded debt not merely in the United States but throughout the world, and that therefore they have no credits elsewhere in the world with which to offset their debits to us. From this he concludes that in seeking to find our balance of floating credits it is not permissible to subtract from Europe's debt to us our own debit balances with non-European countries.

This conclusion is, I believe, erroneous. Before considering it directly, it is interesting to note that if in strict conformity with Dr. Anderson's view that for war-impoverished nations there are no triangular offsets in international trade, we should remove from his balance sheet the trade balances of the European nations not engaged in the war, his figure would be reduced to $2,782,000,000, or by about a billion dollars. Our large exports to Europe since the armistice have been greatly swollen by the purchases of the European neutrals; with the belligerents our excess of exports has been smaller than in the war period, and has steadily diminished.[13]

The interesting question suggested by Dr. Anderson's article, however, is that of our relations with the European belligerents. It is easy to paint too black a picture. As was predicted in the earlier studies referred to at the beginning of this article, European recovery

[13] *E.g.*, Our huge trade balance in 1919, the largest in our history and $900,000,000 larger than in 1918, was due to an increase in our excess of exports to Europe, and Dr. Anderson's large figure is largely ascribable to that fact. But our balance with our former allies was almost exactly the same as in 1918. (Excess of exports to Great Britain, France, Belgium, and Italy: in 1918 $3,406,000,000; in 1919, $3,493,000,000; in 1920 (nine months), $1,837,000,000.) The increase of our European balance was caused mainly by a remarkable expansion of exports to six neutrals—Denmark, Norway, Sweden, Spain, Switzerland, and Netherlands. Our exports to them increased five-fold over 1918, and the excess of exports increased $568,000,000. From January 1, 1919, to October 1, 1920, our excess of exports to these countries was $990,000,000. These heavy exports represented in part the payment of our previous adverse balances, in part the superior buying power of nations not so much affected by the war as the belligerents, and in part, perhaps, purchases for the account of neighboring nations, as Germany, where exchange on New York has been less favorable.

has been very slow indeed.[14] But that should not blind us to the fact that in 1920 the statistics of European foreign trade have shown a distinct improvement. Space forbids a detailed statement of the figures, but in the past year the export trade of France, Belgium, and Italy has increased much faster than their imports; and German exports have exceeded imports.[15] In addition Germany has paid some twenty billion gold marks in kind to the Allies; and the other nations

[14] It is unnecessary to summarize again the darker aspects of the European situation. See previous page. As to the failure to provide adequate revenue to cover current expenditure, to which reference is there made, it should be said that the experience of all nations that have endured a régime of inconvertible paper provides evidence that depreciating paper money by its very nature, once the movement is well under way, involves almost inevitably a series of budgetary deficits—a situation in which current expenditure outruns current revenue, no matter how frequently it is attempted to raise the latter to the current level of values. For taxation is by its nature relatively fixed, whereas with paper money steadily depreciating expenditures will be rising almost from day to day. To some extent Europe's budgetary difficulties have turned on this principle. With lower prices, once the initial depression induced thereby is past, the problem will become less difficult to handle.

[15] For recent statistics of European trade see Federal Reserve Bulletins, section on Wholesale Prices Abroad; reports of International Financial Congress, Brussels, September, 1920; Industrial Research Section of Belgian Ministry of Economic Affairs, etc. The improvement shown by the foreign official statistics is confirmed by the report recently published by the United States Department of Commerce, based on a circular inquiry to American consuls in Europe: see *New York Times*, December 26, 1920.

The recovery of French trade is especially worthy of note. Exports have increased markedly in both quantity and value. In 1913 the excess of exports, representing interest payments on French capital abroad, tourists' expenditures and the like, was 18 per cent of the imports and 10 per cent of the total trade. In 1919 the excess of imports over exports was 71 per cent of the imports, or 41 per cent of the total trade. In the first nine months of 1920 the excess of imports fell to 41 per cent of the imports, and 26 per cent of total trade. The improvement has been progressive, and by August and September, the latest months for which data are available, the excess of imports had fallen below the prewar figure; being but 16 per cent of total imports or 9 per cent of total trade. Average monthly exports in 1920 increased 815,000,000 francs, or 112 per cent over 1919 (first nine months), while monthly imports have increased but 150,000,000 francs, or 6 per cent. The monthly averages for August and September are indeed remarkable. Compared with the 1919 average, they show an increase of 1,550,000,000 francs in exports, or 214 per cent, while imports have increased only 232,000,000 francs, or 9 per cent. Virtually the whole increase in imports has been in raw materials, while the expansion in exports has been mainly in manufactures.

Foreign Trade of France (1,000,000 francs)

| Monthly average | Imports | Exports | Excess of Imports |
|---|---|---|---|
| 1913 | 702 | 573 | 129 |
| 1919 | 2483 | 726 | 1755 |
| 1920 (nine months) | 2633 | 1541 | 1091 |
| 1920 (Aug. & Sept.) | 2714 | 2276 | 438 |

See *Federal Reserve Bulletin*, November, 1920, p. 1205.

named have made notable progress in building up the invaded territories. At the same time, our exports to Europe in 1920 (first nine months) fell $560,000,000, and our own imports therefrom increased $538,000,000, so that we have had the smallest balance with Europe since 1916 ($2,306,000,000). In other words, European foreign trade this past year would seem to have displayed a distinctly wholesome and hopeful trend.

The crux of the difference between Dr. Anderson's view and my own, however, is to be found in the analysis of the British trade revival since the armistice.[16] There can be no doubt that taking into account the remarkable revival of British exports, and also British foreign invest-

[16] Great Britain is the only European belligerent which has relaxed its gold embargo. Of our total import of gold since January 1, 1919 (to November 10, 1920) amounting to $410,000,000, $209,000,000, or over one-half, has come directly from Great Britain (and probably $40,219,000 more gold imports from Hongkong have been on British account). Approximately $131,000,000 of this represents receipts from the Reichsbank for foodstuffs sold by the United States to the German government, and a great part of the remainder has represented merely an exchange operation, the result of our ability to outbid others in the London auction rooms owing to the greater depreciation of sterling here than elsewhere, particularly since last winter; so that the actual outflow from the Bank of England has after all been small. Yet such an outflow has occurred and is one of the most significant indications yet apparent that the British trade situation is steadily returning to normal. Equally convincing have been the trade figures of the past year. Distinct improvement was noticeable in 1919; but during 1920 (first ten months), while imports have increased £331,000,000, or 25 per cent, this has been more than offset by a remarkable increase of exports, amounting to £578,000,000, or 78 per cent more than in 1919. Part of this remarkable increase in exports has of course been the result of the high prices of the first half of the year, but the same is true of the imports. Exports have, moreover, shown a notable increase in quantity, also. Excluding coal and coke, the exports increased no less than 46 per cent over the 1919 period, and including coal and coke (which have declined markedly this year) the increase has been 33 per cent. It is interesting to recall that in the same period our own quantity exports *decreased* 14 per cent. Great Britain also has normally a large excess of imports, representing interest on her foreign investments (estimated by Sir George Paish to have been about $18,500,000,000 in 1913) and the earnings of her merchant marine. Subtracting reëxports from both sides of the balance, the excess of imports in 1911-13 averaged £134,000,000, which was 22 per cent of the yearly average imports, and 12 per cent of the average total trade. In 1919 the excess of imports was £669,000,000, which was 46 per cent of total imports, and 31 per cent of total trade. In the first nine months of 1920, the excess of imports was £314,000,000, which was 24 per cent of the total imports and 12 per cent of the total trade. Taking the figures for the last four months available (July through October) the excess of imports has actually fallen below the prewar proportions, being only 13 per cent of total imports and 7 per cent of total trade. Here is proof that British trade, though still falling short of the prewar volume figures in both exports and imports, has regained the normal relation of exports to imports, and indeed even surpassed it in recent months.

ments (still estimated by Edgar Crammond at $15,000,000,000) and her shipping earnings, Great Britain on the balance of long and short-time indebtedness is still the world's creditor. As Dr. Anderson has pointed out, however, and as was stated in my own article of last spring,[17] England has used her improved position in foreign trade to assume a considerable share of the indebtedness of the Continent to us, rather than to pay off her own indebtedness here. This is indicated by the fact that New York banks and dealers have sold to London in large part their holdings of francs, marks, and other currencies; and for this reason sterling has probably ruled somewhat lower than its own merits would warrant and the other European exchanges somewhat higher.[18]

But to conclude the analysis of these sterling operations at this point is, I believe, to overlook their most significant aspect. These operations represent not a new element in our international relations, but the revival of a very old one. They indicate that in spite of the war Great Britain has already recovered her traditional position as the world's money market; and Britain's recovery of her traditional function in international trade is the very best evidence that triangular offsets are today operating upon our *own* international balance. The fact that London is assuming the burden of other countries, the fact that New York bankers are converting their holdings of other exchanges into sterling credits, the fact that we have had, meanwhile, an adverse balance with non-European countries and a favorable balance with Europe—all this is strikingly reminiscent of prewar conditions and prewar practice. Then, as now, we had an adverse trade balance with non-European countries, while we had an excess of exports to Europe. These *individual* balances had no significance, however, for then, as now, we converted our exports, no matter to what country sent, into sterling, and with London credits paid off our adverse balances to other parts of the world.

The natural assumption is that we are today continuing this practice, that we are to a large extent cancelling our debit balances with

[17] "The Future of Our Foreign Trade," *Review of Economic Statistics*, April, 1920, p. 41.

[18] One may easily exaggerate, however, the effects of the British assumption of other countries' burdens upon the rate of sterling exchange in this market. Our direct trade relations with Great Britain have been markedly one-sided, and have constituted the major portion of our huge balance of trade in the last six years. In the last two years of the war our trade balance with Great Britain alone showed an excess of exports amounting to $3,641,000,000, or 51 per cent of our excess of exports with the world as a whole, and since January 1, 1919, our excess of exports to Great Britain has been $2,937,000,000, which is also 51 per cent of our total balance of trade.

non-European countries by means of London credits. If this is not the case, one is faced with the necessity of explaining how these debit balances have been disposed of. Are we to assume that non-European countries are today carrying the United States with short-time credits, as we have been carrying Europe? The fact that since the armistice the dollar has gone to a premium throughout the world would certainly not bear out such an assumption.

It is probable that the practice of converting other currencies into sterling has been intensified since the outbreak of the war by the abnormal dislocations and disparities in exchange rates occasioned by the war, which have greatly increased the scope and volume of arbitrage transactions.[19] In large part these dealings have turned upon the fact that sterling has stood higher in New York than most other currencies. The records of the Division of Foreign Exchange of the Federal Reserve Board are illuminating in this regard. They show that countries in which sterling was depreciated sold their sterling balances for dollars to New York, where sterling during the period of the pegging operations was at only 2 per cent discount, and with the dollar proceeds either bought gold for export or converted dollars into their national currencies. After our gold embargo went into effect these sales of sterling to New York diminished somewhat, the inability to purchase gold for export reducing the profitableness of the arbitrage, but even under these circumstances the volume of sterling sales in New York by foreign countries was very considerable, and was an important factor in the depression of the dollar in certain neutral countries. After the lifting of the embargo in June, 1919, it is probable that these sales of sterling by neutral countries increased, and constituted an important factor in the marked fall of the sterling rate which set in at that time, as well as in the heavy outflow of our gold during the last half of 1919.

On the other hand, countries whose exchanges were depreciated here more than the sterling rate would find a profit in buying sterling bills in this market and in effecting their payments through the sterling medium. The records of the Division of Foreign Exchange referred to indicate that such countries bought more sterling from New York

[19] On the arbitrage transactions, see Annual Report of the Federal Reserve Board, 1918, pp. 51-56; 1919, pp. 47-48. Before the beginning of the war arbitrage operations were practically confined to the three principal commercial countries of Europe. Since the war American dealers have had arbitrage operations with practically every commercial country in the world. The total arbitrage transactions of American dealers from February 20, 1918, to June 25, 1919, were:

Foreign Exchanges purchased from other countries by the U. S. $1,606,710,000
Foreign Exchanges sold to other countries by the U. S..... 1,296,454,000;
of this total of $2,903,164,000, $1,831,357,000, or 63 per cent was in sterling bills. *Ibid.*, 1919, p. 48.

than they sold to it. Though these records do not extend beyond June 25, 1919, when the operations of the Division ceased, there is no apparent reason why this practice should not have continued. Among the countries indicated by the records as making net purchases of sterling in New York are France and Italy. It is interesting to note the paradoxical fact, therefore, that, so far as these arbitrage transactions are concerned, the effect of the French and Italian operations would be to raise the sterling rate in New York, while the operations of the neutrals would be to depress it.

### IV. The $100,000,000 Foreign Trade Financing Corporation

It is unnecessary to carry further this brief survey of European conditions. What it indicates is that the foreign trade and the capacity to produce, not merely of England but of other important countries, have distinctly improved during the past year. Though affording a brighter prospect for the future, this improvement does not, of course, alter the fact that our bankers and exporters are today burdened with the necessity of financing our trade balance, that they are now carrying some $2,852,000,000 of short-time export credits, and that this burden is growing heavier from month to month. That this method of export-financing is an unsound and temporary makeshift, which cannot be carried much farther, is generally recognized. Our most pressing problem today is to relieve the banks of this burden and provide a sound and permanent basis for a large and beneficial foreign trade.

I am in hearty accord with the decision of the government to withdraw from export financing. I see no valid grounds for the recent suggestions to revamp governmental war-time agencies to serve in times of peace. Such action could be of but temporary effect, and our situation demands a permanent trade financing mechanism. Moreover, the revival of governmental agencies would be in danger of prolonging the transition to more normal conditions. We must not forget that since the government ceased its credit advances to the Allies in June, 1919, and removed the various war-time restrictions upon foreign commerce, there has in fact been a very sensible trend toward a more normal trade balance. Down to last September the gap between exports and imports was being steadily cut down. That this process did not involve a positive decline in value of exports, we have seen to be due entirely to the continued rise of prices down to last May. The quantity figures show a distinct decline. If our export balance can not be financed in any other way than by extensions of short-time credit, whether these be made by the government or by banks, it is better that this decline of our exports should continue. There is little to be gained and much to be lost by indefinite continuance of a policy of paying for our exports out of our own pockets.

A method of trade financing which offers a satisfactory permanent basis for the continuance of a large and beneficial foreign trade is that provided by the Edge Act. And the most significant event relating to foreign trade since the armistice is the recent decision to establish a $100,000,000 foreign trade financing corporation under that act. There is not space to outline in detail the machinery provided by the Edge Act. In effect, the plan is to finance exports by the sale to American investors of the debentures (up to a maximum of $1,000,000,000) of the trade financing corporation, which debentures shall be secured by the rehypothecation of foreign securities delivered as collateral to the corporation by the foreign importers of our products. This plan has two advantages. It provides a means of supplanting short-time credits by long-time credits. In other words, it provides a method of accomplishing what we have seen, in the earlier portions of this paper, to be the only sound and effective basis for a permanently large and beneficial outflow of exports and the only means whereby the overturn of our trade balance can be postponed beyond a brief period —an outflow of American investments. In the second place, it removes the chief obstacle which in the past has largely prevented such an outflow—the hesitancy of the American investor, born of lack of familiarity with foreign conditions. Under this plan Americans will be asked to invest in the bonds of an American corporation, with which they are thoroughly acquainted and which has the active participation and support of our leading bankers throughout the country.

This mechanism is not unfamiliar or untried. It is the mechanism of the British, Scotch, Swiss, and other European investment trusts, which have been operated successfully since the third quarter of the last century. It is very similar to the method which has been employed in the United States in some lines of domestic trade. American electrical manufacturers, for example, have for many years sold equipment to street railway companies who could pay for it only with their corporate bonds maturing after a number of years. The manufacturers have maintained subsidiary companies which have taken street railway bonds, and deposited them with a trust company under a trust agreement to secure an issue of the subsidiaries' own notes, which the subsidiaries have then sold to corporations and individuals for permanent investment. For a different purpose, it has been employed, in one instance, in our foreign trade. On August 1, 1916, the American Foreign Securities Company, incorporated by a group of American bankers, made a three year loan of $100,000,000 to the French government, secured by a deposit as collateral by France of $120,000,000 of securities. These securities the company rehypothecated with a New York bank under a trust agreement to secure $94,500,000 of the Company's own three year

5 per cent notes, which notes the Company then offered to the public. That the operation was profitable is indicated by the fact that the company paid dividends throughout the three year period averaging more than 8 per cent upon its $10,000,000 of capital stock.[20]

In establishing foreign financing corporations under the Edge Act we should bear in mind two fundamental considerations. The first is that in the long run such corporations will render most effective service not in financing our trade with Europe but with other parts of the world. It is true that the European trade is today most in need of a sound financing mechanism. The present unsatisfactory state of our European trade, however, is but temporary, whereas the need for foreign investment to support foreign trade will be permanent and growing. And the avenues of trade expansion will not be European. On the future trend of American foreign trade the tendencies of prewar trade furnish unmistakable evidence. From 1900 to 1914 the proportion of our European trade to total trade steadily diminished, the decline being most marked in exports. Our trade with non-European countries expanded, the most marked increase being in trade with Canada and other North American countries. In the early years of the war exports to Europe expanded enormously, but the proportion fell off rapidly and in 1918, before the war was over, was only slightly larger than in 1914. Since the war, particularly in the past year, this process has gone farther.[21] The percentage of exports to Europe has diminished rapidly, reaching the lowest figure in our history, while exports to North America, South America, and Asia have greatly expanded, and reached new high marks. Similarly, the remarkable increase in our imports since the armistice has been chiefly from non-European countries.

The prewar tendencies in character of trade throw further light on the geographical distribution. The broad tendencies were:

1. The decline of exports of foodstuffs and the growth of imports.

2. The marked increase, absolutely and relatively, of exports of manufactures, and the more moderate decline in relative importance of imports of manufactures.

3. The increasing importance of raw materials, particularly in imports.[22]

[20] For brief accounts of foreign investment trusts and of American analogies see the *Federal Reserve Bulletin*, November, 1920, pp. 1168-74; and "Foreign Financing Under the Edge Act," Guaranty Trust Company of New York, 1919.

[21] Percentage of Exports to Europe, 1918—63 per cent.
First 9 months 1920—54 per cent.

[22] In other words, we were passing from the "young country" agricultural-extractive stage to the industrial stage. We were barely self-feeding. Imports of crude foodstuffs surpassed exports in each year from 1909 to 1914 and total food imports

The change from the agricultural-extractive to the industrial stage in our foreign trade is proceeding steadily and rapidly. It means three things. It means that an outflow of foreign investment is the logical expectation. That is shown by the experience of the other leading industrial nations. It means that in the long run this outflow will serve to finance the expansion of our trade primarily with the non-European world. The experience of other industrial nations indicates that this outflow will go mainly to the relatively young and undeveloped countries and will be closely allied with foreign trade expansion, in both exports and imports. And, finally, it indicates unmistakably that our capital, whether provided by corporations under the Edge Act or by any other process, will in the long run be used primarily to finance not exports of agricultural products but of manufactures. The present emphasis upon financing agricultural exports is but a temporary phase, due to the sudden drop of our price level, which has hit agricultural interests hardest.[23]

surpassed food exports in 1912 and 1914. Excluding cotton, exports of raw materials were declining in importance, and imports were growing rapidly, to feed our expanding industries. The war caused a slighter change in these proportions than appears at first glance. The chief change was the abnormal outflow of food products to Europe; but food exports at no stage of the war exceeded in volume the figures of 1899, and in the past year food exports have markedly declined.* Meantime the expansion of manufactures has continued. The percentage of manufactures to total exports was in 1900, 40 per cent; in 1914, 47 per cent; and in 1920 (nine months), 51 per cent.

* Percentage of food exports to total exports:

| | | |
|---|---|---|
| 1914 | 17 | per cent. |
| 1919 (9 mos.) | 36 | " " |
| 1920 (9 " ) | 25 | " " |

[23] In conclusion, it must be repeated that the logical ultimate outcome of our altered international position as a result of the war must be an overturn of our trade balance. This does not imply a reduction of exports. Foreign investment will sustain a large export trade. It will not, however, prevent the overturn of the trade balance, though it is likely to postpone it for a time. The remarkable growth of imports, in quantity as well as value, down to last September, indicates that the overturn is likely to come quite as much by a process of imports growing up to exports as by a decline of exports. The growth of imports is, of course, desirable as well as logical. We cannot forget that foreign trade must be reciprocal, and rests ultimately upon the payment for goods with goods. A tariff-raising policy, therefore, would be at this time a mistake.

Though we shall doubtless succeed in maintaining a foreign trade substantially larger than in prewar years, there will be, of course, with the fall of prices, some decline in the value figures. That decline has already set in in the import trade, becoming marked last September. It was due primarily to the fall of prices in the foreign countries supplying the bulk of our imports (particularly in sugar, wool, coffee, hides, tea, silk, and other raw materials), coupled with the depression in this market induced by the fall of the domestic price level. That a corresponding drop has not occurred in exports is ascribable mainly to the fact that the harvest exports have been going forward.

## THE FOREIGN TRADE BALANCE OF THE UNITED STATES—DISCUSSION

B. M. Anderson, Jr.—With very much of Professor Williams' admirable paper I am in accord. The time limit compels me to confine myself chiefly to the points on which I dissent. The chief differences between Professor Williams' figures presented in his paper and those which I presented in the *Chase Economic Bulletin* of October 5, to which he has referred, grow out of differences in methods and assumptions rather than differences in sources of information. He and I have checked up roughly, and find ourselves in general agreement regarding the main items: indeed, I have borrowed certain of my figures from his earlier balance sheet, and he has taken one or two from mine.

The chief difference in assumptions hinges on one point: he affirms, and I deny, that our balance with the world as a whole is the same as our balance with Europe. His assumption is that Europe's current debts to us are offset by our current debts to the non-European world—that Asia and South America, etc., have been sending us goods to pay for our shipments to Europe. I deny this, maintaining that Europe is in debt on current items to the rest of the non-European world also and that, by and large, she has no current net credits in the outside world against which she could draw. Professor Williams maintains, and I deny, that the old triangular arrangements still hold. He maintains that the triangle of credit still continues. I maintain that the breaking of the triangle in the shipment of goods has also broken the triangle in the transfer of credits. In the shipment of goods, the triangle has been broken by the war. The non-European world has sent an excess of goods to us; we have sent an excess of goods to Europe; but the third side of the triangle, the shipment of an excess of goods from Europe to the non-European world outside of America, has dropped out.

Professor Williams states that there is no difference in theory between us on this point, but that the question is one of fact merely and that the burden of proof is upon me.

I do not know why he should say this. I think that the facts are so notorious that I may ask the court to take "judicial notice" of them. Europe has been at war. The war has consumed the energies of European neutrals and belligerents alike. All of them have bought on credit all they could from the outside world, and have sold very little to the outside world, for six years.

Professor Williams calls attention to the great excess of goods which has come to us from the non-European world since the first of January, 1919, and asks how we have paid for it unless by drawing on our European credits. I think this question can be answered very simply. We have paid for it with gold, with silver, and with Federal Reserve notes chiefly, though we have also piled up some debts in the non-European world, represented in part by bank balances which outside countries hold in our banks. Our excess shipments of gold and silver alone fill most of the gap, as the following table reveals:

U. S. Trade Balance with Countries Outside of Europe—From Jan. 1, 1919
Gold and Silver Shipments Included
(000,000 omitted)

| | Exports | Imports | Balance | |
|---|---|---|---|---|
| Commodities | | | | |
| 1919 | 2,734 | 3,154 | —420 | |
| 1920 (11 mos.) | 3,429 | 3,853 | —424 | |
| Total | 6,163 | 7,007 | —844 | Unfavorable |
| Gold | | | | |
| 1919 | 329 | 72 | 257 | |
| 1920 (To 12/20) | 321 | 97 | 224 | |
| Total | 650 | 169 | 481 | Favorable |
| Silver | | | | |
| 1919 | 212 | 89 | 123 | |
| 1920 (To 12/20) | 106 | 86 | 20 | |
| Total | 318 | 175 | 143 | Favorable |
| Grand Total | 7,131 | 7,351 | —220 | Unfavorable Balance |

Of the $844,000,000 adverse commodity balance of trade with the non-European world from January 1, 1919, to December 1, 1920, only $220,000,000 remain when our balance on gold and silver shipments is deducted. This $220,000,000 is reduced further by not less than $103,000,000 by shipments of Federal Reserve notes from the United States to Cuba between January 1, 1920, and October 20, 1920, as indicated in the *Federal Reserve Bulletin* of November, 1920, page 1164. (My information is that this article was written about October 20). More recent information from banking circles in New York would indicate that still further large shipments of Federal Reserve notes have gone to Cuba since the *Federal Reserve Bulletin* article was written, while a good deal went in 1919. Some millions of Federal Reserve notes also have gone to some other countries. Federal Reserve notes circulate more or less as currency in some of the northern portions of South America, in Santo Domingo and Hayti, and in some other places. It appears, also, that the amount of American currency held in the Argentine and in Brazil has increased by possibly a million dollars in the period that we are discussing.

Closer analysis still will show that, when we leave Cuba out of account, we have more than paid for our excess of imports to the non-European world with actual gold and silver. Our adverse balance with Cuba for the twenty-three months ending December 1 was $382,000,000. This, deducted from the $844,000,000 adverse balance with the non-European world as a whole, reduces our adverse balance with the rest of the world to $462,000,000. Our favorable gold and silver balance with these countries, however, was $624,000,000, so that we have sent to the non-European world, excluding Cuba, $122,000,000 more in gold and silver during this period than we needed to send them to pay for our balance in goods for the same period. (Our gold

and silver dealings with Cuba during this period were negligible.) Leaving out Cuba, therefore, there is no balance to account for. I do not know what basis Professor Williams could find for maintaining that Cuba has been paying Europe's debts to us by shipments of sugar here. Cuba was not indebted to Europe for goods during this period, and I have found no reason to believe that Cuba has extended any appreciable amount of credit to Europe to be used in making payments here.

Close contact for the past two years with the actual trading in foreign exchange, moreover, makes me question very many of Professor Williams' contentions. We have not paid for goods in South America with sterling on a large scale; probably three fourths of our dealings with South American countries in the period under discussion has been in terms of dollars rather than of sterling.

We have not bought rupees in London on a great scale for paying rupee obligations in India. It has been hard to get rupees in London; occasionally one could get "Council Bills" there, but, in general, it has been far easier to buy rupees in New York than it has in London. Two or three institutions in New York have been selling rupees on a much larger scale than London has. We have even been able to force the use of dollars on Australia and South Africa in increasing measure, particularly in the last six months. Since the drastic decline in rupees, there has been an increased use of sterling for payments in India, but the magnitudes have not been very great. Our dealings with Europe, outside of Great Britain, have been very largely on the dollar basis, and with Britain herself the use of dollars has greatly increased. Our dealings with Egypt have been in large measure on the dollar basis; and with Asia, excluding India and Japan, there has been little sterling used, and a very large amount of dollars has been used, for the past four years. There has been little use of sterling in payments to Japan: the yen has been the chief basis for transactions there. On the whole, non-European countries have been sellers of sterling to us, rather than buyers of sterling from us. The New York exchange market has been a better market in which to sell sterling than the market in Buenos Ayres or in several other non-European centers where I have been able to feel the currents of exchange trading.

These are, in part, impressions, rather than statements which I make with full knowledge of the market. I have, however, checked them by talking with several men who deal in foreign exchange. There is not unanimity about all these points. Different banks have partially different experiences. But I think these statements are approximately correct.

There has, then, not been a restoration of normal credit relations, and London is not occupying its normal position as the intermediary in world commerce. There has, rather, been the effort on the part of London to resume its normal place under abnormal conditions, with the result of a terrible expansion of the discounts and advances of British banks (amounting to 41 per cent from June 30, 1919, to June 30, 1920), and an increasingly difficult position for London. I think, on the whole, that, if all these current items could be checked up, Europe's current debt to us would be increased rather than diminished by taking into account (1) Europe's relations with the non-European world and (2) our relations with the non-European world. I am told that banks in the Far East have transferred balances of $200,000,000 net from London to the United States since the

armistice, increasing, of course, the pressure on sterling in the process. Gold has at times gone out of the United States on British account.

In general, there is no reason for supposing that any non-European country, except the United States, has been in the position to extend larger credits to Europe in proportion to its trade relations than have the United States. It is highly probable that Europe has drawn on us to pay her debts to the non-European world to a greater extent that she has drawn on the non-European world to pay her debts to us.

Professor Williams shifts the issue when he says that I ought to try to work out our relations with the European belligerents alone. This might be interesting for some purposes, but it would not reveal our *balance with Europe,* which is what my figures are designed to do.

I took account of the credits which neutrals had with us on January 1, 1919. I knew that Scandinavian countries and some other neutrals had large balances in New York banks. I credited all of that to Europe. All Europe has been tied together financially. Spain's investments in marks are very heavy. This is true also of Holland, the Scandinavian countries, Belgium, Britain, and France. Belgium and France are so closely tied together financially that Belgium francs and French francs move up and down together, despite the fact that Belgium's position, both financially and industrially, is much better than that of France. All the European exchanges, except Swiss exchange, are at a heavy discount in this country. Denmark and Holland have been buying goods here to ship to Germany, and the financing of imports by the Continental neutrals has been largely through London in much the same way that the financing of our exports to the Continental belligerents has been. Sterling, despite its decline in New York, has gained greatly, relatively to the European neutral exchanges, in the past 18 months.

I regard Professor Williams' first point, then, as invalid, and his second point as irrelevant.

The first published statement, so far as I know, regarding the peculiar position of London and of sterling exchange was contained in *Commerce Monthly* (a journal with which I was at the time associated) of January, 1920 (issued December 25, 1919), page 19. The statement follows: "The severe decline of sterling exchange probably reflects not simply the adverse trade position of the United Kingdom itself, but, in addition, the pressure of the burden, which London is carrying, of a good portion of the entire floating indebtedness of the other European countries to the United States. Our exports to the several countries of Europe in good part have been made either against sterling bills or against other currencies which have been converted, by sale, into sterling. While this is the natural consequence of London's position as the most important market for international exchange, it has accentuated the fall of sterling in our markets."

Professor Williams agrees with this view, but suggests that I may have exaggerated in my article in the *Chase Economic Bulletin* the extent of it, because much of our huge trade balance is directly with England. This is, however, a point which I had myself made. Part of London's burden grows out of the fact that she has been buying from us for cash, but selling to the Continent on time. Professor Williams thinks that the extent to which she has bought from us to sell to the Continent cannot be as great as I would hold because British figures for reëxports are not exceedingly large. I

should maintain that the figures for reëxports do not tell the story. Britain has bought raw materials from us for cash, which she has worked up and sent to the Continent. These do not appear as reëxports. Moreover, she has been able to send British products of various kinds to the Continent because of her ability to get similar products or substitutes from us.

I am not impressed by the figures which Professor Williams refers to, designed to show that our exports represent merely increase in prices and not in physical quantities. Statistics have been offered reducing exports to a common physical unit, the pound avoirdupois, which indicate this. Such figures fail to take account, however, of the great change in the character of our exports. We have sent out an increasing proportion of finished and even highly finished products and a greatly reduced proportion of bulky products of low value and great weight. This was especially true during the war, when shipping space had to be economized and only the most highly concentrated forms of products could find ship-room.

Two pounds of alcohol are evaporated in making a pound of smokeless powder. In economic essence the alcohol is exported in the smokeless powder—but it doesn't get into the statistics of pounds of goods exported. We need a subtler physical unit than the pound avoirdupois before such a computation is of value. If it could be handled, a unit based on a day's labor would be better. The significant thing is the drain which the export balance has made on our labor and resources. Many items have not got into the export figures. Thus exports had to be rushed out at high speed during the war—an extra economic service, not easily subjected to statistical measurement, but one which involved much labor and much friction and waste. The figures for trinitrotoluol exported—themselves very incomplete because so much of this went in Government vessels—do not include our losses through explosions at the Tennessee Copper Company's plant and elsewhere. The ships we built are not included nor our war activities in general.

The same criticism applies to figures based on a selected set of exports taken at 1913 prices, and taken as representative of exports in general. Such figures have been offered as showing that the physical exports have increased only moderately. These figures again, however, make no allowance for the changed character of our exports. The elements that enter into them are all elements which were important enough to be separately listed in the figures of 1913 and many of the most important wartime exports are not entered at all. Moreover, no change is made in the weighting of these elements as the years go on. The 1913 weights are continued.

There is not time for full discussion of the Quantity Theory or for the strange view that high prices are adequately explained by the volume of deposits and money in circulation and have no reference to the export and import situation. I do not see how anybody can find confirmation of the Quantity Theory in the events of the last eleven months. Prices have dropped something like 40 per cent on Bradstreet's Index Number from the first of February, 1920, to the first of January, 1921, despite the fact that the volume of money in circulation and the volume of deposits subject to check have increased in that period. On the other hand, while the whole of this price change is not to be explained simply by reference to the export and import situation, it is very clear that that has been an enormous factor. During the latter part of 1919 and through September of 1920 there came a great increase in our imports from non-European countries of raw

materials. Our export balance, which had been $625,000,000 in June, 1919, dropped to about one tenth that, namely, $65,000,000 in August of 1920. The imports of raw materials broke the prices of raw materials in many cases far below prewar figures. The collapse had gone so far by October, 1920, that such imports were drastically checked. Meanwhile, exports of farm products, notably meats, were much reduced, and their prices broke heavily. The collapse in these markets cut under the buying power of large elements of the population, and the whole price fabric crumbled.

Professor Williams and I are agreed that, whether the exact amount of Europe's unfunded debt to private creditors in this country is in the neighborhood of $3,000,000,000 or in the neighborhood of $4,000,000,000, it is, in any case, too large. We are agreed that investors' money, rather than bank money or the working capital of business enterprises, must be called upon to finance future export balances. We both agree, I take it, that the balance of trade must be greatly reduced in the near future whether it disappears or not.

I am not sure that we are in full agreement as to the motives which should govern our efforts to get investors' money for continuing an export balance with Europe. In my view, the critical problem is Europe's need and not our own need for markets. By proper readjustment in our industries and our prices we can consume at home as much as we produce. But we must rehabilitate Europe. This means that we must find money—investors' money—to get over to Europe the goods that she really needs. But merely finding money is not enough. Europe has had many billions from us since the armistice, and they have done her very little good. She has taken an appalling proportion of finished manufactures ready for consumption which she ought to have produced herself. She has taken an appallingly small proportion of her exports from us in the form of raw materials which she could work up. We should accompany the money by control over Europe's buying in such a way as to get her the things that will really help her.

Raleigh S. Rife.—Professor Williams' paper is a very interesting and suggestive study of the trade balance of the United States since the armistice. Professor Williams reaches the conclusion that the trade balance has been unsoundly financed to the extent that there are outstanding short-term unfunded banking credits to an amount approximately of $3,000,000,000. While Mr. Anderson is in practical agreement with Professor Williams in regard to the amount of unfunded credit outstanding, I wish to state at the outset that I am not in agreement with the position taken.

Since the armistice the banks of the country, while desirous of serving the needs of the business community, have not encouraged their clients in indiscriminate extension of credit to European buyers. Many instances might be cited during the last 18 months where exporters have been discouraged against taking in payment of goods short-time Treasury bills of various European governments. The banks have been guided by the principle that the credit of any foreign government would be materially impaired by indiscriminate issuance of Treasury bills. The banks have, of course, followed their normal procedure of issuing 90 to 120 day acceptances and short-term credits of this character, to be covered, of course, by payments at the time of maturity. While there are instances of unusual extension of credit on the part of our business men to foreign purchasers, I do not be-

lieve as a matter of principle that they have been overzealous in such extensions of credit.

Our statistical information is not sufficiently complete to enable an approximation of all the invisible items that enter into the payment of the balance of trade of our country. It is quite generally known that the American public has been a heavy purchaser of foreign exchange because of the speculative opportunities for profits. Further, Americans have been heavy purchasers of internal bonds of many European countries. A considerable amount of foreign securities has been transferred to the American market. In this instance, reference is made to Japanese sterling bonds, Argentine sterling bonds, etc. In addition, the investment of American capital in private channels in many countries must be taken into account. All of these are invisible items in our balance of payments which it is very difficult to measure statistically, and frankly I do not believe that anyone knows definitely enough the status of these invisible items to charge that our credit structure has been made top-heavy on account of unfunded short-term credits.

In estimating our balance of payments, I prefer not to limit my figures to the period beginning with the armistice because of the difficulty of knowing to what extent export shipments following the armistice were paid for by credits extended by the United States Government before the date of the armistice. A much safer policy in handling the figures is to go back to July 1, 1914, and bring the total figures up to October 30, 1920. Our export figures show that the total excess of merchandise exported over merchandise imported was $17,675,000,000, to which should be added the net exportation of silver of $458,000,000, bringing the total to $18,133,000,000. The excess of imports of gold over exports amounted to $779,000,000. Subtracting this figure from the total of export movements shows a balance of trade of $17,354,000,000 in favor of the United States for the period from July 1, 1914, to October 30, 1920.

In turning to the credit operations with which this huge export balance was paid, the following figures are indicative of the situation. The United States Government extended credits to allied and associated governments to a total of $9,580,000,000. There is outstanding in the American market approximately $2,500,000,000 of loans and stocks which have been offered to the public and have been purchased by private investors. It is generally understood that there have been important sales by foreigners of American securities which they formerly held. Various estimates have been made of the volume of such transactions and in this matter there are, of course, many invisible items and our statistical information is not complete enough to enable us to determine this figure with exactitude. It is generally recognized that during the year 1920, with a further fall in exchange rates, the sale of foreign held securities on the New York Stock Exchange has been more pronounced. Realizing the imperfections to be attached to an estimate of the amount of American securities purchased from foreign holders, I suggest that a reasonable figure should be about $3,000,000,000.

We now come to the discussion of the second group of invisible items, which include the purchase of internal bonds of foreign countries, the purchase of other classes of foreign securities, the private investment of American capital abroad in branch factories, in development work, etc. The writer's opinion is that $1,000,000,000 would be a fairly conservative estimate for this type of investment. His belief is further strengthened by the

estimates that have been made by Mr. Cates of Canada, Mr. Fields, formerly editor of the Montreal *Financial Times*, and himself, which, taken as a whole, show that the so-called invisible investment of American capital in Canada since the outbreak of the war, including the purchase of internal bonds and the investment of private capital, has approximated $500,000,000. Having in mind the heavy investment of American capital of this same character in sugar developments in Cuba, developments in Central America, the packing, mining, and petroleum industries in South America, the rubber industry in the Near East, as well as the investment of private capital in Europe and internal bonds of the European countries, it seems that the additional $500,000,000 would not be far from the truth. This brings the total of credit operations to a total of $16,018,000,000. The balance of $1,274,000,000 is covered in part by purchases of foreign exchange currencies and short-term banking credits.

This in itself is not a figure about which we need to be disturbed at all, and does not indicate that our foreign trade since the armistice has been unsoundly financed by the large extensions of credit on the part of banking institutions. This evidence points to the conclusion that, in so far as foreign trade financing is concerned at least, the banks as a whole have been conducted sanely and soundly during a critical period, and instead of overextending their credit in foreign transactions have been ultra-conservative in this respect. As a general proposition our banking structure has passed through a very critical period and remains in unusually sound condition.

It is well to pass from this review of the statistical information to a brief discussion of financing our export movement. There has been developed in recent months, with the drop in commodity prices and the slowing up of business, a much keener interest on the part of the public at large of the necessity of financing our exports. This is liable to lead to the discussion of hasty and unsound methods of financing. The recent discussion of the revival of the War Finance Corporation is a case in point. In theory, as well as in practice, I am opposed to the revival of such an institution and think it highly desirable to keep the government out of the financing of our trade movement as much as possible. There is only one excuse for government participation in such financing and that is from the standpoint of insurance. There are certain sections in Europe of which it is impossible today to determine their credit position so that private investors may invest their funds in the securities of these countries, and yet these countries have great need for American railway equipment, for machinery and other articles to revive and restore their economic life. For example, Roumania needs, above all, transportation facilities so that the agricultural production may be mobilized for shipment and its rich oil resources developed. It would be a great help to all that part of Europe east of the Rhine to be able to buy the needed things in America to restore its economic production. The British have pointed the way in the formation of the British Trade Corporation, which acts as a sort of insurance fund against risk, so that the cost of insurance is transferred to the government. The French Government has recently taken a little different step in guaranteeing certain credits extended by private capital. The necessity of restoring that part of Europe east of the Rhine to a normal economic production is of such importance to western industrial Europe and the United States that we cannot expect a normal resumption of business and recovery from the present depression until this

part of Europe is restored. Consequently, the question of insurance of the risk is of such vital importance to the whole economic life of the people of the United States that there might be some reasonable argument in favor of allowing the government to participate in a limited way in the insurance of the risk involved in extending credit to those parts of the world.

The disarrangement of foreign exchange and the depreciated value of the paper currencies of many countries of Europe have resulted in a revival of barter as a means of trade. The old Indian methods of trade have thus been revived in trading with many of the countries east of the Rhine. Dr. Visserung, of the Bank of Netherlands, has made a rather constructive idea to keep in touch with these markets. His suggestion is the formation of a large barter finance corporation. For illustration, if such a corporation was formed in the United States, it would represent in its membership a great number of American producers. American goods would be exchanged for products of those countries and these products in turn would be sold in whatever world market it was possible to find. It also would take in exchange for products valuable concessions and thereby lay the basis for considerable investment of private capital. We realize that this method suggested by Dr. Visserung has many practical difficulties if carried into definite operation. However, it is of particular value in that it permanently establishes some connection between the American market and these various countries.

The other point about which I wish to speak in my limited period of time is the necessity that is now confronting the country of getting American capital interested in opportunities in foreign countries. Many of these countries have great demand for capital of a private nature, which may properly be called enterprise capital. It is that type of capital that can go in and develop the resources of a country, assuming the risk of developing and receiving in turn profits. Such opportunities do not warrant an appeal to the loan investment market, but would offer sufficient inducement to American enterprise capital. The investment of enterprise capital in foreign countries implies the exportation of men to act as managers of such enterprises. No greater service can be performed today for this representative body of university teachers of economics than to impress on our young men the necessity of devoting a part or all of their time to service in foreign enterprises which are financed by American capital.

# AN INTRODUCTORY SURVEY OF THE BITUMINOUS COAL INDUSTRY

By C. E. Lesher

*Editor Coal Age*

Picture, if you will, an industry, the foundation of modern industrial progress touching the daily life of nearly every individual in the country, simple almost as agriculture in its basic elements, as unorganized as the retail grocery business, limited on the one hand by almost inelastic market, on the other by transportation, over neither of which has it control, and you have before you the bituminous coal business as it is today and as it has been for the past thirty years.

Bituminous coal is power, and power is the essential of modern industry. We are no longer an agricultural nation, we are the largest workshop in the world. Manufactured goods now exceed raw materials and food products in our exports; the majority of our people live in the cities. The fallacy that we can distinguish between essential and nonessential users of coal has been exploded. All use of coal is essential, not necessarily because the product made in every plant is essential, but because the continuous and uninterrupted operation of every plant is necessary. Whole communities are often dependent for their existence and livelihood on single industries within their borders, and the operation of those industries is dependent on power, that is, on coal.

Coal is the first essential of all our progress. Coal is required to mine the raw materials of industry, coal, iron ore, all other minerals. Coal is required to thresh our wheat, to mine and prepare the fertilizers for the fields. Coal is required in large quantities to transport the raw materials to factory, the food to the people, and to move commodities to market here and abroad. On an ample and cheap supply of bituminous coal has been built the vast industrial machine we call the United States.

Coal is not the last thing required, it is the first, yet coal is treated in our national thinking as are such commonplace things as sand and gravel, slag, refuse, and waste products. Nowhere is this better shown than in the treatment of coal as traffic by the railroads. A low grade, nonperishable commodity, coal is given deferred movement. So ingrained in practice is the deferrment of coal by the railroads that during the war orders issued for prior movement of coal were treated lightly and results were accomplished only after the idea that the orders from above were for a purpose and that coal was a war necessity had soaked down the line to the lowliest switchman. Although none would deny the importance of transportation to coal, yet today no other commodity is forced to accept the rationing of cars. Whenever the

demand for cars suitable for transporting coal exceeds the supply, the steel mills, the sand and gravel pits, the farms, the sawmills, the automobile factories, are given what they requisition, and the left-overs are rationed out among the soft coal mines.

Except prices are high enough to excite public opinion, coal has never stirred the popular imagination as have other large industries. The romance of gold mining in the West, the spectacular history of oil, the fascination of railroading, and the wonders of the financial developments of the steel and allied industries have become commonplace to common people; but the truth about coal has never been made the subject of story and play, and few have cared to delve into the details of how coal—common black dirt—is mined and marketed. Coal, soft coal at least, has given the world no Rockefellers, Schwabs, Carnegies, Morgans, Goulds, Vanderbilts, or Tom Lawsons.

Perhaps the reason for this is found in the fact that coal is as simple in its economics as agriculture. In the United States deposits of coal are widely distributed, but two important sections of the country—New England and the Northwest—being without such natural resources. From the northern line of Pennsylvania to the center of Alabama is the most wonderful area of coal in the world. In the Mississippi valley, in the Rocky Mountain region, and even on the Pacific Coast are ample deposits of coal. So kind has nature been to us that in these vast areas of coal-bearing rocks one may have coal for the taking. It outcrops on the hillsides or is but buried by a shallow covering. Whereas the coal that enters commerce comes from a paltry six or seven thousand mines, thousands of farmers and inhabitants of small towns in the hills and on the plains have but to go to the country banks, the gopher holes, and strip pits, of which there are between ten and twenty thousand, for the coal to meet their ample needs.

So easy is the coal of access in most of these fields and so simple is the initial work of opening a mine that every period of unusual demand, in which prices rise more than a few cents above the cost of production, finds many entering the business. Whereas the development of 200 new mines of consequence each year will suffice to maintain capacity at the present rate of consumption, there were, it is reported, 1000 new mines opened this year in Central Pennsylvania alone, and this field produces but 10 per cent of the country's total soft coal. Having your own coal mine is almost as simple as having a war garden. Raising hogs, cotton, and corn are no more competitive than mining bituminous coal. Almost without exception, the rules of the land require that the railroads must give a prospective coal-mine operator a siding and give him cars for his product, that is, at least, a share of the cars. Furthermore, the rules favor the new mine, for if a mine is

rated as under development it is insured a definite minimum supply of empties. The scramble for traffic in the past has left us a legacy of precedent favoring the opening of coal mines that we could well have dispensed with the past four years.

Freight rates on the railroads have been designed to give the operators in each field a wide latitude in markets. There is scarcely a consumer but has the opportunity to choose his coal within wide ranges. The producer in Illinois and Indiana sells his coal in from eighteen to twenty states, and the consumer in Chicago can get his coal from twenty different fields in six states. It was clearly shown in the trial of the "smokeless" operators in New York in 1917 that even the smokeless coal of West Virginia meets competition in its every market to such an extent as to preclude the possibility of any combination in restraint of trade.

The coal deposits are so bountiful, the number of mines so great, and it is so easy to increase productive capacity, that monopoly in the bituminous coal industry is not possible today. Were there a group of capitalists strong enough to buy all the soft coal mines in the United States, tomorrow there would be other and new mines opened to compete with such a trust, for there is no possible combination of capital with strength to control all the coal-bearing lands in the United States.

With local associations, bureaus, and other groups in every field and market center, the producers, wholesalers, and retail dealers in coal have their respective national organizations; but with all these the coal industry is unorganized. One reason is that for the most part such associations as we now have are new, the product of the war. They did not have being in the dull times before the war started on the other side. But the real reason why, with all its associations, the coal industry is unorganized is that the law prohibits combined action with respect to the vital concerns of the trade-price and distribution. It is interesting to note that as late as 1888 the output from the coal fields then shipping to the Atlantic seaboard—seven in number—was controlled both as to tonnage and price by a combination of producers known as the Seaboard Association. The percentage of the expected demand on the tidewater market was predetermined and allocated to each field by a governing board composed of operators from each district. Shipments from the fields were confined to the demand, so as not to flood the market, and prices were fixed by a majority vote of the governing board.

Such combinations of course passed out with the incoming of the Sherman Law, and today it is, and for thirty years has been, a case of each shipper for himself and the devil take the hindmost. The past four years have been profitable for the coal trade, but for this the coal

man can claim no responsibility. Conditions absolutely outside his control have given to coal a remarkably steady market at good prices, the four years considered as a whole. It is, however, not hard to speculate as to what would have been the position of the bituminous coal industry if in 1914 the war had not affected conditions so fundamentally.

In a "Statement of Facts" issued Dec. 1, 1914, or six years ago, the operators of Illinois and Indiana set forth for the President of the United States and the public the condition of their industry. Declaring that the normal state of their industry for some years had been such as to "endanger lives of the miners, waste the coal reserves, and deprive the operators of any hope of profit; that, subject to inter-state laws governing combinations respecting prices and distribution and to state laws governing the mining, fastened between combinations of buyers on the one side and labor unions on the other, they, the operators, found themselves unable to prevent waste or to enjoy sufficient profit, if at times they could make any profit, to properly equip their properties for the protection of their miners. Asking that special attention be given the needs of the coal industry in the appointment of the then newly authorized Federal Trade Commission, these operators said, "There is no desire now or hereafter to establish a coal monopoly. Much less is there a desire to extort unreasonable profits." They invited "appropriate and definite governmental control" to the extent "at least of permitting all of their activities to be known to the public." "Coal operators would not object to, but, on the contrary, would invite such publicity and supervision."

How desperate these operators considered their condition in 1914 is evidenced by these published statements. Had not the conditions surrounding their markets been violently changed by the war, they would have indeed been in desperate straits by this time. Now, the fundamental conditions have not changed from prewar times. Coal operators are no more permitted now to combine in setting prices or in controlling distribution than they were six years ago. They are today confronted by the same labor unions and the same combinations of large steam coal buyers. They are today picking up the threads of the story where they left off six years ago.

Consumption of coal in the United States is inelastic. No more coal is consumed than is needed to perform the work at hand or to give the necessary heat. No considerations of price will induce a manufacturer to burn more coal than is required to produce the goods for which he has a market. As householders we consume no more coal than we need to keep warm: no matter how low the price and no matter how high the price, we require a certain minimum. As differing from consumption, however, is demand. Although a consumer will in a given period burn

no more than is required, he may for different reasons buy more or less than he burns, adding to or taking from storage to make up the difference. No one in the industry can increase or decrease this demand. The consumer is the arbiter of the destiny of the coal producer, and is fast becoming an important factor in the production of coal. It is roughly estimated that 30 per cent of the coal produced comes from mines owned by and operated for the consumer. In fact, because of this and the inability of the coal men to organize for selling, the consumer today holds the balance of power. In view of the history of coal prices this past season, it may sound strange to say that the consumer holds the balance of power. The high prices of this year were made by the consumer, and had he exercised his power there would have been no such prices. It was not combination among the coal producers or shippers that caused ten dollar coal this year, nor was it lack of mines and miners to produce all the coal for which there was demand. We are all familiar with the theory of the law of supply and demand—that as demand increases and prices rise production will be called forth by the higher prices to meet this demand, and when output meets demand prices will fall. This would inevitably have happened in coal but for the fact that the link between producer and consumer, the railroad, failed to meet the demand placed on it. High prices could not affect the rate of production after the railroads had reached the limit of power to carry the coal.

Coal at the mine this summer was no more worth the ten dollars it too frequently brought than it is today. What buyers were paying for was coal plus transportation. The place value of coal this past season has been magnificent, from the standpoint of the seller who was in position to deliver. It was coal in a car that was worth money, not coal in the mine. Today producers of coal are competing with each other at the buyer's door; last summer they were competing for cars at the mines.

You will hear something later on about the irregularity of operation in the bituminous coal industry. There is a form of irregularity of operation of coal mines that is not social in the sense that it is due to general economic conditions, to seasons, or to car supply. It is the variation in operation between adjacent plants due to differences in the ability of the owner to sell his product. When the coal market is easy, when buyers must be approached with offers, then the coal that is off grade is moved with difficulty and the mine from which it comes and the labor that produces it are idle much of the time. The average running time that shows in our statistics is not the figure for each property.

One of the commonest causes for variations in the rate of production from mines in the same field in periods of slack demand for coal is the

adopted policy of the railroads to buy their fuel in part with assigned cars. When not abused by the railroad, the practice of contracting to supply the output of a mine to the railroad with an assured supply of cars, no matter how short the field may later be, is a business venture. The railroad gets a low price because giving a steady and fairly continuous market; the operator takes a small but certain gain in preference to gambling on the chance of higher prices in the open market during the life of his contract. But the result is that under this system we have some mines always at work and others idle.

The bituminous coal operators are not unanimous in condemning the assigned car practice, but the majority are opposed; and through the National Coal Association they have instituted suits to abolish it, under the provisions of the Transportation Act. For obvious reasons, the miners union is also opposed to the use of assigned cars and the idleness of some mines while others are working full time. Private cars, those owned by the coal-mine operator or the consumer, are always assigned; they can be used only at the mines to which they belong. It has become quite a common practice for concerns to purchase open-top equipment as a protection for their business. One large company in the East has built up a remarkable business to tidewater owing to its ability to guarantee delivery of coal, because of the cars it owns. The steel companies are large owners of private cars.

A new question has arisen in respect to these cars. On certain railroads the trackage, terminals, and motive power are not sufficient to give 100 per cent service to all the mines if all mines have orders for all their coal and the railroad has sufficient cars for all the business offered. On these roads are large interests owning both mines and cars, and these interests have so far been given service in preference to the mines depending on railroad owned cars. We have here a condition not of car shortage, but of transportation shortage.

The tendency is toward greater use of machinery in mining. For four years the urge has been for machines to gain larger tonnages; now it will be as in the years before the war to make for lower costs. More than half the bituminous coal mined is undercut by machines, and today equipment manufacturers are developing loading machines that promise to still further increase the output per man per day. A machine has been successfully developed that cuts the coal from the face, picks it down, and loads it into mine cars in one continuous operation.

No survey of the bituminous coal industry could be complete without reference to labor. The cost of labor and the labor cost are both items of importance to the coal producer and to the consumer as well. The cost of mine labor, that is, the wages paid, are the highest today they ever have been. They are too high to be permanent. Common

labor, the day-wage man, gets $7.50 per day compared with $2.85 in 1916. One reason this wage is so high is that the days worked are less than full time; the other reason is that the miner is so well organized that he has been able to secure his share of the profits of the coal business in the past few years. As the period of large profits is over for a time at least, if not for all time should Senator Calder have his way, the wage of the mine worker must come down. The country must have coal as cheap as possible, and labor cost represents about three quarters of the total expense of getting the coal and loading it on the railroad cars. For every dollar of mine cost the wages take nearly 75 cents.

The coal mine workers are among those best organized of all classes of workmen. When the call for the strike of last year was issued, seven out of every ten men in the soft coal mines of the United States responded.

The great markets for bituminous coal are the railroads, manufacturing industries, steamship bunkers, and coke and gas plants. The greatest density of industry, rail traffic, and steamship demand is in the eastern part of the United States. The mines serving that territory therefore have the steadiest demand for their product. As we go westward, the use of soft coal for heating increases and we find the demand more seasonal and the market less steady. Considered broadly, therefore, the mines in the East have the best running time, those in the Middle West rank next, and in the West the finding of a market in the summer time is a serious problem.

A new element has been introduced into the market problem of the bituminous coal industry in the foreign demand. This demand can only be satisfied, from the very nature of things, by the mines in the East that already have the best potential demand for their product. For this reason the production of coal in the Appalachian region this past year has been of utmost interest to all who have been watching the shortage. The West and Middle West were recognized as being fully able to take care of themselves, but would the East be able to meet the demand at home and at the same time fill a large foreign demand? It has been done, but only by concentrated effort on the part of the railroads and the coal men. A condition of shortage may always be expected to develop first in the East and to disappear there last.

Much has been said about the coal contract. In the days before the war it was the coal operator who was complaining that the contract he had with the consumer was not worth the paper it was written on, because the buyer could and did suspend shipments on it at his pleasure and did not hesitate to refuse contract coal when he could get coal in the open market at lower prices. That is happening today. But, in the meantime, the shipper has altogether too often taken advantage of

the vulnerability of the coal contract to sell his coal in the open market at high prices instead of meeting his obligations.

Shippers of coal contend that so long as they can not be sure of cars in which to load their coal, they cannot make hard and fast contracts to deliver. The car supply clause in coal contracts is the joker no one has been able to completely eliminate as yet. With the experience of the past four years behind him, no vender of coal would be warranted in giving an absolute guarantee of delivery without charging well for it; and the market will not stand such an addition to price on the part of any one or of a few shippers. A more or less complete change in the methods of marketing coal must be had before the ideal of binding contracts in coal are realized.

# THE IRREGULAR OPERATION OF THE BITUMINOUS COAL INDUSTRY

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## Fact of Irregular Operation

The bituminous coal mines of the United States have a developed capacity and a present labor force far in excess of that required to supply the demand.[1] In consequence the capital and labor engaged in the industry are idle a large part of the time. During the last thirty years the mines have been idle an average of 93 working days in every calendar year.[2] Even in 1918, the year of maximum production, they lost 59 days, or 20 per cent of the full working time.[3] The condition is apparently not improving for in 1919 it is estimated that the mines were idle 111 days, and the record for 1920 will also be unsatisfactory. This condition is no fault of the operator, who is aware of its results but is powerless to prevent it. The causes are rather the seasonal nature of the demand, irregularities in the supply of cars and of labor, and no less important, the nature of the resource and the competitive conditions surrounding the industry. Strikes, in ordinary years, have been only a minor cause of lost time.[4]

The loss of time is least in the fields of the Appalachians and of the Southern Rocky Mountains, and most acute in the Mississippi Valley.[5] The regions in which the losses are greatest have shown a tendency to become union territory.

The effects of irregular operation are injurious to all concerned in producing, transporting, or consuming coal. To the miner it means loss of earning power; it begets in him irregular habits, and it is a contributing cause to the absenteeism and the large labor turnover complained of by the operator. To the mine owner it means high costs per ton,[6] administrative difficulties, and mechanical troubles in the mine

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[1] Except where otherwise specified the statements in this paper refer to the bituminous coal industry alone. The conditions in anthracite mining are entirely different.

[2] For a statistical analysis of irregularities in operation of coal mines, see George Otis Smith and F. G. Tryon, *Fluctuations in Coal Production,—Their Extent and Causes; Mining and Metallurgy*, Number 159, Section 3, pp. 9-28, March, 1920.

[3] *Idem*, p. 10.

[4] *Idem*, p. 26.

[5] *Idem*, pp. 19-20.

[6] U. S. Fuel Administration, *Report of Engineers' Committee*, p. 61, 1919. Also Smith and Tryon, *op. cit.*, pp. 21-22.

resulting from cessation of work. To the railroads it means a seasonal load and loss of revenue in spring and summer when normally, as in 1919, large numbers of coal cars are idle. To the public it means high-cost coal, for the labor and capital engaged in the industry must be paid for the 93 days on which they are idle in each year as well as for the 215 days on which they work. It also contributes to the waste of our underground resources that results from the present regime of intense competition.

Statistical analysis discloses three distinct types of fluctuations in production: (1) secular, (2) seasonal, and (3) daily. These will be discussed in turn.

1. *Secular fluctuations.* The fluctuations that accompany business depression, of which the severest have occurred in 1893-97, 1904, 1908, 1914, and 1919, are profound while they last and are beyond remedy by the coal industry itself. Only a sixth of the time lost in the past 30 years has been due to this cause, however. If the maximum effect possible is allowed for these secular fluctuations there is still a residue of lost time—on the average 78 days per year—which must be due to other factors.[7]

| | | |
|---|---|---|
| 1890 — 82 | 1900 — 74 | 1910 — 91 |
| 1891 — 75 | 1901 — 83 | 1911 — 97 |
| 1892 — 89 | 1902 — 78 | 1912 — 85 |
| 1893 — 104 | 1903 — 83 | 1913 — 76 |
| 1894 — 137 | 1904 — 106 | 1914 — 113 |
| 1895 — 114 | 1905 — 97 | 1915 — 105 |
| 1896 — 116 | 1906 — 95 | 1916 — 78 |
| 1897 — 112 | 1907 — 74 | 1917 — 65 |
| 1898 — 97 | 1908 — 115 | 1918 — 59 |
| 1899 — 74 | 1909 — 93 | 1919 — 111* |

*estimated.

2. *Seasonal fluctuations.* Differences in rates of consumption in summer and winter give a distinct seasonal rhythm to the demand for coal.[8] In a normal year, such as 1913, the rate of production is lowest in April and highest in November. If the annual average rate be taken as 100, the rate in April in a normal year is about 83 and the rate in November about 115.[9] The productive capacity required during the month of maximum demand is thus from 35 to 40 per cent greater than in the month of minimum demand. In the "even" years, when the biennial wage agreements are negotiated, the normal April depression is ac-

[7] Smith and Tryon, *op. cit.*, p. 12. The average number of working days lost per year at bituminous coal mines, as shown by the records of the U. S. Geological Survey, has been as follows:

[8] *Idem*, p. 27.

[9] *Idem*, p. 14. The seasonal fluctuations in the prewar years were as follows, expressing the average rate per working day for each month as a relative, the average for the year being 100:

| Month | "Even years" | | "Odd years" | |
|---|---|---|---|---|
| | 1914 | 1916 | 1913 | 1915 |
| January | 113 | 114 | 104 | 103 |
| February | 108 | 111 | 99 | 85 |
| March | 123 | 99 | 92 | 89 |
| April | 68 | 82 | 84 | 81 |
| May | 80 | 88 | 89 | 83 |
| June | 88 | 89 | 96 | 91 |
| July | 96 | 94 | 96 | 95 |
| August | 106 | 97 | 103 | 102 |
| September | 114 | 99 | 107 | 114 |
| October | 106 | 105 | 110 | 118 |
| November | 98 | 114 | 115 | 124 |
| December | 101 | 108 | 103 | 122 |

centuated by labor disturbances, in anticipation of which a peak of forced buying occurs in March.

The seasonal variation in demand was marked during the prewar years, 1913-16. It was obscured in 1917 and 1918 by the artificial conditions of the war period but recurred with heightened effect in 1919.[10] The reason we had no slump in demand in the spring and summer of 1920 was that we inherited a deficit of 26,000,000 tons from the strike of November-December, 1919. The seasonal variation may therefore be expected to reappear.

These statements are based on averages for the entire country from which the averages of individual districts depart widely. In some fields of the northern Appalachians, for example, the shipments to the Northwest by way of the Lakes, which must be made during the season of navigation, flatten the curve of demand or even transform the summer slump into a gentle peak.[11] It is in the Middle West that the seasonal fluctuations are sharpest. In Illinois, for example, the production in November, even in years of no wage negotiation, is twice as great as in April.[12]

3. *Daily fluctuations.* Even within the week, in times of active demand, there is a distinct rhythm from day to day. Car supply is best on Monday and becomes less and less satisfactory as the week progresses. Production on Saturday is therefore likely to be 15 per cent less than on Monday. The daily fluctuations are not the least significant of the irregularities which beset coal-mine operation, for they indicate that even at times of maximum demand the mines do not work full time.[13]

[10] *Idem*, p. 13.
[11] *Coal Age*, vol. 17, p. 1033 ff., May 20, 1920.
[12] Smith and Tryon, *op. cit.*, p. 17.
[13] *Idem*, p. 16.

### Mine Capacity Inflated Far Beyond Even Maximum Week's Output

We have thus noted not only that there are years when production is below that of the maximum year, seasons in the year when it is below that of the maximum season, and weeks in the maximum month when it is below that of the maximum week, but even that there are days within the maximum week when it is below that of the maximum day. In fact, there has probably never been a day in recent years when all the mines and all the miners were working at once, although this perfect adjustment of operation to capacity was nearly reached on the Monday of the last week before the strike of November, 1919. The best working time ever attained in a six-day week was 86.8 per cent of full time (48 hours), in July, 1918.[14] Early in December, 1920, when production was very heavy, the mines averaged less than 75 per cent of full time. The estimated present capacity of the mines and working force is at least 16,000,000 tons a week, yet the maximum ever produced in a single week was 13,146,000 tons.[15] In other words, our mine capacity and labor force are not only greater than the average need but they are *much greater than the maximum need.* To borrow a phrase from power engineering, our mine plant not only has a bad load factor, but it is much larger than is needed to meet the *peak load.*

So great an economic waste challenges attention. Before considering, however, the measures which have been proposed to prevent it, the causes underlying the inflation of capacity beyond even maximum requirements must be understood.

The area underlain by coal in the United States is enormous (458,000 square miles),[16] and a great part of the coal-bearing land east of the Rockies had been taken up in small tracts for farming or for other purposes before its value for coal was known. In the east it is becoming somewhat difficult to find a block of unoccupied coal land big enough to support a large new mine and with access to transportation, but until recently there was room for all comers. To suppress competition by buying up the reserves has therefore been impossible. In fact, the wide dissemination of ownership in itself has tended to stimulate development, for each possessor of coal-bearing land wishes to realize on his holding. The coal beds are generally thick, lie nearly flat, and are but little faulted. They are readily accessible from slopes, drifts, or shallow shafts. Under such conditions, although a large modern mine

[14] U. S. Geological Survey, *Weekly Coal Report No. 54,* p. 2, July 27, 1918.

[15] Week ended October 25, 1919. U. S. Geological Survey, *Weekly Coal Report No. 121,* p. 1, November 8, 1919.

[16] M. R. Campbell, *The Coal Reserves of the United States,* in *The Coal Resources of the World,* vol. 2, p. 538, 1913.

may involve an investment of capital running into millions, it has been possible to open up a small mine at low initial expense. The capital required can often be raised locally, partly because of the "jingle fallacy," which has deceived so many investors in mining enterprises—the fallacy of thinking that 6 per cent on a mining stock is the same as 6 per cent on a mortgage and neglecting to write off the depletion. The nature of the resource has thus encouraged overdevelopment. In addition, transportation—no less important—has been guaranteed a new enterprise. The factor limiting output in a time of high prices has usually been car supply; at such a time anybody with cars to load can sell coal. No matter how overburdened the railroad serving the coal field may be, it is obliged by law to put in a siding and supply cars for the new operation.[17] The opening of the new mine does, indeed, dilute the car supply of the entire region, but the operator can count on his pro rata share of the cars available.

The factors necessary to new development—coal lands, capital, and transportation—have therefore been easy to bring together. The necessary incentive has been supplied by the periodic recurrence of high prices. Coal is a necessary of life for which substitution on a significant scale is impossible.[18] The demand for it is therefore highly inelastic. Moreover, when a scarcity exists the bidding for emergency supplies is concentrated on the limited margin of "free coal," that is, coal not under contract. No one knows just how much of the output is under contract and how much available for spot purchase, but normally, over the country as a whole, the proportion of spot coal is perhaps 25 per cent.[19] The moment production is interfered with, however, the margin of spot coal shrinks. At the same time the number of persons who want to buy spot coal increases, for many who thought themselves protected by contracts find their contract deliveries curtailed and have to enter the spot market. The interaction of these two principles—the inelasticity of demand and the contraction of the spot tonnage in times of scarcity—bring it about that even a slight maladjustment between supply and requirements may produce a spectacular rise in the spot price, such for example as took place in the summer of 1920.[20] These higher prices in times of active demand were apparently

[17] 34 Statutes at Large, 584.

[18] F. G. Tryon, *The Fuel Oil "Menace," Notes on the Substitution of Oil for Coal during Years 1919-1920: Black Diamond*, vol. 65, p. 506, November 20, 1920.

[19] C. E. Lesher, *Prices of Coal and Coke*, War Industries Board Price Bulletin No. 35, *History of Prices During the War*, p. 21, 1919. Also United States Bituminous Coal Commission, *Majority and Minority Reports to the President*, p. 25, 1920.

[20] National Coal Association, *The 1920 Soft Coal Shortage, Letter of George Otis Smith to Senator Walter E. Edge, dated December 13, 1920*, p. 6, Washington, D. C., 1921.

the prime incentive to the new development which has kept mine capacity so far in excess of possible requirements. Although in comparison with the war years prices before 1916 seem modest indeed, the spot price would rise almost every year to attractive levels during the limited period of brisk demand,[21] and occasionally, as after the anthracite strike of 1902, even contract prices would rise well above the cost of production.

The inflation of mine capacity in times of high prices has been strikingly demonstrated in the last five years. Since 1915, when the spot price began to rise sharply in response to the war-time demand, there has been an extraordinary increase in capacity. In 1915 the annual capacity of the soft coal mines was about 675,000,000 tons.[22] Today it is certainly 800,000,000 tons, and there is evidence pointing to a figure of 900,000,000 tons. The increase in five years has therefore been between 125,000,000 and 225,000,000 tons, or between 19 and 33 per cent. The increase has been particularly marked during the last twelve months. It is not due alone to the opening of new wagon mines or the reopening of old mines, long abandoned. It means also a number of large new workings and heavy investments in new development work, new equipment, and new mining machines at properties already established. A significant change has been the increase in the number and output of steam-shovel strip pits. The aggregate effect of these influences on capacity has been great, and the bituminous industry was probably never more heavily overdeveloped than it is today.

The lure of occasional high prices was what enticed new companies to enter the field. When they were once in, other forces compelled additional development. The necessity of pushing development in order to be able to meet carrying charges on extensive investments in coal lands was pointed out years ago by Walker.[23] Either for speculative purposes or to anticipate their competitors, many companies have acquired coal lands far in excess of the reserve they need for their mines. The recurring interest on these investments must be paid in cash, and often the only way to raise the cash is to open more mines and sell more coal. Every new mine means dilution of the demand and of the car supply in times of shortage, and consequently a slight decrease in the working time at the mines the company is already operating. But the company

[21] Lesher, *op. cit.*, p. 31.

[22] C. E. Lesher, *The Distribution of Coal and Coke*, U. S. Fuel Administration, *Report of the Distribution Division*, Part I, p. 19, 1919.

[23] Francis Walker, *Cause of trusts and some remedies for them*, in *Papers and Discussions of the Twenty-Second Annual Meeting of the American Economic Association*, 1909, pp. 196-7.

knows that the new mine will be allotted its share of the available cars and that most of the dilution will be passed on to its competitors. Under these conditions the tendency to new development proceeds as inevitably as the physical process of osmosis.

These factors combine to inflate mine capacity. At this point another factor enters in which impels the owner to operate his property as near to its capacity as he can, even when the price is low. As Walker further pointed out, the individual operator can not curtail his output without increasing his costs, and when the margin of profit is small he dare not increase his costs.[24] The extra amount of coal produced by him has "much less effect in depressing the market price than in diminishing his own costs," and he is therefore compelled to continue to sell coal on the narrowest margin, or perhaps at a loss.

The picture is not complete without a reference to the evil results of overdevelopment and overproduction when the price is deflated. The abounding prosperity enjoyed by the industry during the war years and 1920, when a combination of circumstances kept prices high, are likely to make us forget the conditions of 1914-15. At that time the market was depressed, and competition forced prices often below the cost of production. Rather than abandon his mine, many an operator sold coal at prices barely above the immediate cost in labor and materials, and below cost when reasonably computed. Coal-mine credit was poor and many companies in the hands of receivers. There is abundant testimony that most of the time before the war the industry was operating on a very narrow margin of profit. It is such competition as this that makes inevitable the wasteful methods of mining which in many of our fields leave half the coal behind in the ground in a manner that renders its ultimate recovery very unlikely.

### Measures Proposed To Overcome Irregular Operation

To eliminate the waste involved in irregular operation is thus an economic problem of real importance. Obviously the magnitude of the loss cannot be accurately determined, but the writer hazards the opinion that at present levels of wages and costs it constitutes a tax on the consumer in the neighborhood of a million dollars per working day. The bituminous operators are not unmindful of their responsibility and may take heart from the fact that the anthracite industry has successfully combatted the evil. In the nineties and the first decade of the twentieth century, working time in the anthracite region of Pennsylvania was even less satisfactory than in the bituminous fields. By offering summer discounts in prices, by constructing storage yards, and by other devices the anthracite operators have done much to flatten

[24] *Idem*, pp. 295-6.

the curve of demand and have raised their working time to a point far above that reached by the bituminous industry.

Various measures designed either to stabilize the demand for bituminous coal or to regulate competition and overdevelopment have been proposed, and will be discussed in turn. The writer has no new solution to offer and no concern with any of the measures advanced by others beyond a statement of their merits and defects.

*The 30-hour week.* One of the arguments advanced by the United Mine Workers in favor of the 6-hour day and the 5-day week has been that this arrangement would limit the amount of coal that could be produced in the season of brisk demand, and so force greater activity in the slack season.[25] Although this might be the immediate result, it is hard to see how the plan would in any way change the demand. Its first effect would be to cause high prices at the mines for coal for winter delivery. It would encourage new development and so would tend to make worse the very condition it is supposed to improve.

*More cars.* To the operator marketing his coal in times of high prices, nothing is more disappointing than the "car shortage" that is likely to prevail at such times. Dissatisfaction with existing transportation facilities takes two forms: (1) complaints of unequal distribution of the car supply, due to the practice of assigning cars, the use of private cars, etc.; and (2) complaints of general inadequacy of the transportation system, either through lack of sufficient cars, sufficient motive power, yard and track facilities, or any other cause which prevents cars from being placed and removed as fast as the mines are able to load them. With the first of these complaints we need not concern ourselves here. The disagreement over assigned cars is essentially a dispute between the operators and the railroads. It has no great influence on the working time of the industry as a whole, except indirectly as it may cause dissatisfaction among the workers in certain mines and thereby may breed strikes.

With regard to the second complaint, it is clear that at present the peak demand for cars is far in excess of the supply. Whenever the market is active, transportation tends to become the limiting factor in coal-mine operation, which is simply another way of saying that the mines are developed to a capacity far in excess of the car and track capacity. The adequacy of the present railroad equipment available for handling coal is discussed in Mr. Gutheim's paper. No doubt we need more cars. The point will bear emphasis, however, that merely in-

[25] *Increased Price of Coal, Hearings before a Subcommittee of the Committee on Interstate Commerce,* U. S. Senate 66th Congress, 1st Session, pursuant to S. Res. 126, Part I, p. 295, 1919. Also United States Bituminous Coal Commission, *Majority and Minority Reports to the President,* pp. 45-7, 83-4, 1920.

creasing the transportation facilities will not improve the working time at the mines over an extended period. More transportation will have no effect on the seasonal character of the demand for coal. In fact, unlimited transportation would tend to emphasize the inequality between spring and fall demand. Car shortage in time of active buying has been the sole influence depressing the peak of seasonal demand, the only thing that has kept us all from ordering our coal the week before we wanted to burn it. While car shortages have been of frequent occurrence, it is a curious fact that only in a few instances have they curtailed the consumption of coal. In the winter of 1917-18 consumers actually went without coal, the cause being unmistakably the failure of the railroads to provide cars for loading coal at the mines, or still more, to deliver coal already on wheels. But for the most part the effect of car shortages has been to limit the quantity of coal which could be produced in the fall and winter, thereby putting up the price and inducing many consumers to lay in a reserve supply in the spring and summer.

Furthermore, it is no less important to utilize the railroad plant steadily throughout the year than to provide regular employment for the mine plant. The investment in open-top cars alone is at least of the same order of magnitude as the investment in coal mining, and the share of the entire capital invested in the railroads of the country that is applied to hauling coal is probably much greater. To ask the railroads to spend money enough to give the mines a 100-per cent car supply in times of peak demand is to ask them to do the very thing the operators themselves are trying to avoid.[26]

The statement that a great increase in the number of cars and in transportation facilities will be of no benefit to the industry applies only to the industry as a whole; it may not apply in a particular locality. New cars under private operation of the railroads will, of course, mean new cars on particular lines, not on the railroad system considered as a whole. New cars on the Chesapeake & Ohio Railroad may largely benefit the operators along that road, making it possible for them to participate in larger degree in supplying the country's demand for coal, but what the Chesapeake & Ohio operators gain other operators on other railroads lose. Let no one suppose that by indiscriminately increasing the number of cars and the carrying capacity of the railroads, the problem of irregular operation in the coal industry will be solved.

*Dovetailing work with other seasonal industries.* It is frequently urged that mine workers may find employment in other occupations during periods of idleness, and in fact, there is a slight seasonal migra-

[26] Smith and Tryon, *op. cit.*, p. 22.

tion of men to and from the mines. The evidence submitted to the Bituminous Coal Commission on this point, however, failed to indicate that the opportunities for such transfer of labor from mine to farm or factory are extensive. The most promising field for the practice would appear to be the Middle West, where many of the mines are near farming regions. If the mines were closed during the entire summer, the miners might indeed seek other employment, but instead they continue to work two or three days a week. Mining on an extensive scale, at least, is of necessity a continuous operation. Unless roof and bottom are unusually stable any long interruption to operation invites disaster. Furthermore, in the Appalachian region, where the greater part of the coal is produced, most of the mining towns are far from other industries. The typical mining settlement of West Virginia is in a narrow mountain valley, where space for even gardening around the houses of the employees is scanty. The proposal is suggestive enough to deserve careful study, but it appears to offer no adequate solution for intermittency of employment at the mines.

*Storage of coal.* It has been frequently pointed out that as long as consumption is seasonal, and in a climate like that of North America it must always be seasonal, the only way to insure steady working time at the mine is to provide adequate storage facilities at some point between the coal in the ground and the furnace of the consumer.

The extension of the practice of storage turns upon a technical problem, the feasibility of storing coal on a large scale without spontaneous combustion and undue losses through escape of volatile matter or physical degradation. The coals of the Appalachian region can generally be stored more easily than those of the Mississippi Valley. As to the feasibility of stocking the former there can be no doubt, for they are stored by the Northwestern Coal Dock operators in enormous quantities under trying conditions. There is a widespread belief that the coals of the Mississippi Valley—Illinois, Indiana, Western Kentucky, and the fields from Iowa to Texas—will not endure storage. Careful investigation by the engineers who have devoted most attention to this subject, however, indicates that with due precautions these coals also may be stored.[27] Of course the precautions necessary cost money, and to be economically practicable, must be offset by beneficial results.

The most convincing demonstration of the practicability of storing western coal in large quantities is seen in the fact that on the day of the armistice consumers had on hand 63,000,000 tons of soft coal, an amount sufficient for six weeks and three days' supply. Millions of tons

[27] H. H. Stoek, *Storage of Bituminous Coal: Mining and Metallurgy*, Number 159, Section 3, p. 29, March, 1920.

of this coal were mined in the Middle West.[28] In fact, by order of the Fuel Administration Appalachian coal had been zoned out of most of the Mississippi Valley except for small quantities moving under permit. Although the purchasers of this western coal reported many fires, only a small part of it burned up or blew away, and the carry-over into 1919 was so heavy as to depress the market for months thereafter. Western coal has been stored in quantities sufficient to stabilize the demand. What was done during the war can be done again, if only the necessary incentive is provided.

*Storage at the mine.* It is frequently urged by those who are unfamiliar with mining conditions in America that stocks of coal should be maintained at the mouth of the mine. This is, indeed, the prevailing practice in parts of Belgium and other countries on the Continent, but under the conditions that exist in the United States the practice would be of value only in evening up the small irregularities in operation during a given week. It would have no influence on the seasonal movement of coal from mine to consumer, and would therefore leave untouched one of the most glaring ill effects of the present system—the unequal load upon the railroads. Neither would it furnish a reserve for the protection of the consumer against a breakdown in transportation, and experience during the war has shown that actual suffering and the closing down of plants are due more to delays in the delivery of loaded coal than to diminution in the rate of output at the mines. So many consumers depend upon the mobile reserve of coal in transit that any interruption to normal movement on the railroads means a scarcity of coal. In addition to these facts the extra cost of putting the coal in storage and reclaiming it militates against storage at the mine. As someone has aptly put it, the cheapest place to store coal at the mine is underground in the bed.

*Storage en route.* Accumulations of coal may sometimes be kept advantageously at points along the way from mine to place of use. Examples of this practice are seen in the great storage yards that were constructed years ago by the producers of anthracite. These yards are used as reservoirs to receive the excess production in summer and to furnish, on the approach of winter, the additional tonnage called for by the heavier demand at that season. It is noteworthy that they were established near points of greatest consumption, close to New York City and to the piers from which shipments were made by water to New England. Only one yard, and that of small capacity, was located in the anthracite region itself. To this type of storage belongs also the

[28] F. G. Tryon, *Consumers Stocks of Bituminous Coal, March 1 and June 1, 1920*, Report of Inquiry by U. S. Geological Survey in coöperation with U. S. Bituminous Coal Commission and Council of National Defense, p. 4, 11, 14, 17, Washington, 1920.

great system of docks at the head of Lakes Superior and Michigan, designed to accommodate both anthracite and bituminous coal, which constitutes probably the greatest storage plant for coal in the world. The docks are necessary because navigation on the Lakes must be completed between April 15 and December 10, and they exercise a beneficial influence on working time in the fields of the northern and middle Appalachians, which supply the Lake trade. To whatever extent similar storage facilities can be constructed elsewhere, the working time in other districts will be equalized. Experience suggests, however, that such intermediate storage is feasible only at some natural breaking point. To halt the loaded train halfway to its destination, store the coal, and later reload and transport it the remainder of the journey would be so expensive that the stored coal could not compete with that sent by through-shipment. The real objection to intermediate storage as a solution of the problem of irregular operation is that it does not guarantee a steady supply to the consumer, because the last link in the chain of transportation may fail at the critical moment. Thus, storage yards for bituminous coal in the vicinity of New York would have availed little to supply New England during recent periods of shortage, for the congestion in traffic through the gateways over the Hudson has on many occasions been the limiting factor in supplying New England. Not the least of the benefits of storage is the security it confers upon the consumer, and that security is not his until the coal is actually in his bin.

*Storage at point of consumption.* The true remedy for the seasonal fluctuation in the demand for coal is therefore storage at the place of use, which will insure the consumer against the menace of interruption to his line of communication with the mine. The magnitude of the task of storing enough coal to equalize the demand is not so great as might at first be supposed. We already habitually accumulate a considerable stock against winter requirements. If in addition to the present normal stock, 20,000,000 tons can be put in storage between March 1 and August 1, the task is done. It is urged that the expense of constructing new storage facilities would be prohibitive. The experience of the war indicates that the additional facilities required can somehow be found, for on the day the armistice was signed the total quantity of bituminous coal in commercial storage was at least 63,000,000 tons, and it is improbable that the normal stocks on November 11 exceed 40,000,000 tons.[28] Where the extra 23,000,000 tons was accommodated is something of a mystery to the coal fraternity. Clearly much of it was in emergency stock piles inadequately protected and inconveniently placed. The fact that it was accommodated somehow indicates, however, that the task of storing enough coal to equalize the de-

mand is by no means an impossible one. What was accomplished once by the consumer can be accomplished again, provided only that storage is made attractive to him.

*Summer discount in prices.* To interest the consumer some inducement in dollars and cents must be offered which will counterbalance the cost of storage. The most successful inducement in actual practice has been the summer discount in the price of anthracite, which was introduced by the railroad companies in the anthracite region in the year 1900. The maximum discount offered amounted to 50 cents a ton in the month of April, and was progressively reduced as the season advanced. It was some years after the summer discount was first offered before the working time in the anthracite region showed marked improvement, but since about 1910 the number of days lost per year has notably decreased, and the summer discount has no doubt contributed to that improvement.[29] Some of the leading producers in Oklahoma and Arkansas have followed the same practice for years with beneficial results.[30] Summer discounts on gas and domestic coals were also made by the Rhenish Westphalian Coal Syndicate, of Germany.[31] It should be noted, however, that summer differentials in mine prices are practicable only where competition is limited. If applied generally to sales of steam coal in the United States, the practice would involve the use of methods which would probably be construed to violate the anti-trust laws.

*Sliding wage scale.* One means of making possible seasonal differences in mine prices is a sliding wage scale that varies with the season.[32] The sliding scale that was introduced into the anthracite region in 1902 by direction of the Anthracite Coal Commission was not designed primarily to assist summer discounts in price, but it did in fact facilitate them.[33] Under this scale the wage rate was increased 1 per cent for every increase of 5 cents a ton in the price of anthracite at New York harbor, and decreased as the New York price declined, except that at no time was the wage rate to fall below a prescribed minimum. The sliding

[29] Smith and Tryon, *op. cit.*, p. 28.

[30] Communication from J. G. Puterbaugh, President, McAlester Fuel Company, McAlester, Okla.

[31] E. Gruner et G. Bousquet, *Atlas Générale des Houillères*, Part II, pp. 128-9. Summer discounts in price appear not to have been introduced until 1906, although the syndicate was organized in 1893. Two prices were announced, one for summer and one for winter, the differential amounting to about 10 per cent of the winter price.

[32] *Report of Coal Stabilization Committee of American Institute of Mining and Metallurgical Engineers*, Section 3 (d): *Mining and Metallurgy*, No. 186, p. 11, December, 1920.

[33] Anthracite Coal Strike Commission, *Report to the President on the Anthracite Coal Strike, May-October, 1902*, pp. 71-2, 1903.

wage scale was abandoned by agreement in 1912, but during the decade it was in force it no doubt assisted in maintaining the summer discounts in prices. As the mine laborers will benefit more than anyone else by a stabilization of working time it seems not unreasonable that part of the burden should be borne by them. Such a sliding scale would presuppose premiums during winter as well as reductions in spring and summer. The sliding wage scale has the further advantage that it could be adopted, provided both parties were agreed, by making it a feature of the wage contracts between the unions and the operators. This course would avoid violations of the anti-trust laws and would offer a means of regulating the seasonal demand that could be put into operation by the industry itself, without legislation.

*Seasonal freight rates.* The most promising measure to induce summer storage by the consumer which has so far been proposed in the United States is the establishment of seasonal freight rates on coal. A bill introduced into Congress by Senator Frelinghuysen in March, 1920, provided for graduated reductions in freight rates from February to July, and graduated increases from August to January.[34] The maximum spread between the highest and lowest months was 50 cents a ton. It was to be expected that the universal application of any change in coal freight rates would disturb established competitive relations between different fields and different types of coal, and this, it was shown, would be the probable effect of the Frelinghuysen plan. The bill was in general supported by operators in the Mississippi Valley and the Southwest and was opposed by the Appalachian shippers and by certain western producers, who thought that their coals, which are ill adapted to storage, would suffer by competition with the coals of other fields. No one set of differentials can be devised which will fit the business of all districts, for though in most fields there is a seasonal demand, the type curves of demand in the Appalachian region differ noticeably from those of the West. As drafted, the bill did not affect intra-state rates on coal, and it was pointed out that unless intra-state rates were swung into line with the differential rates on interstate business, the result would be confusion indeed. As the coal moving in strictly intra-state business constitutes 37 per cent of the total, exclusive of shipments to tidewater and the Lakes, the necessity of working out a harmonious set of differentials on all coal traffic is obvious, if the idea is to be applied at all.[35] These difficulties suggest that legislation intended to establish

[34] Senate Bill 4087, and Senate Bill 4278, 66th Congress, 1st Session. For discussion, see *Increased Price of Coal, Hearings before a Subcommittee of the Committee on Interstate Commerce*, 66th Congress, 1st Session, pursuant to S. Res. 126, Part 4, 1919.

[35] F. G. Tryon, *Seasonal Freight Rates Will Affect Coal Fields in Varying Degrees: Coal Age*, Vol. 17, p. 1033, May, 1920.

seasonal rates should be drawn only in the broadest terms, and that large discretionary powers should be vested in the Interstate Commerce Commission. If the application of the principle were made sufficiently elastic many of the objections raised by operators in particular fields could be avoided. The differentials proposed were probably sufficient to offer a real inducement to store coal. They were at least much in excess of the normal seasonal swing in spot prices in most districts. Of the remedial measures proposed the principle of seasonal rates appears to offer the greatest promise of affecting the seasonal demand for coal. Its chief advantage lies in the fact that it can be applied by statute without any fundamental change in the regime of competition to which the bituminous industry is at present committed.

A counter-proposal offered by the operators as a substitute for seasonal rates was a drawback or rebate on the freight charges paid on coal actually put in storage.[36]

### Deflating Mine Capacity

It will be noted that most of the foregoing devices are designed to overcome the seasonal demand. If successful, their net effect would be to distribute the total annual output in twelve equal monthly installments. This result, desirable as it is from many points of view, would not of itself remove the present discrepancy between annual capacity and annual requirements. If an even distribution of demand could be effected at once it would increase the number of days worked in April only to decrease them in November, and the total number of days worked in the year would remain the same. We should still have an excess mine capacity of 250,000,000 tons and an excess labor force of 175,000 men.

The annual working time can be raised only by deflating the swollen mine capacity—the overdevelopment and overmanning of the mines. To what extent the evening up of demand would contribute to this deflation is problematical. It ought to minimize fluctuations in mine price and therefore to remove the periodic high spot prices, which have heretofore been one of the chief incentives to overdevelopment. Among its results should be fewer new mines and slower development of old mines. Its effect could at best be but gradual and negative, and a single return of a period of scarcity with its orgy of high prices, such as we experienced in 1920, would undo the work of years.

The truth is that the remedies so far proposed do not touch the fundamental fact of unlimited competition. They provide no positive way to check the growth of mine capacity. So long as there is no limit to the opening of new mines, our enormous reserves and our guarantee

[36] *Coal Age*, Vol. 17, No. 21, p. 1038, May 20, 1920.

that a new property shall get its share of the available transportation constitute a standing invitation to new enterprises, an invitation that needs only a tempting rise in the price of coal to find ready acceptance. There will remain also the pressure to open new mines in order to meet payments on investments in coal lands and the pressure to increase output in order to lower unit costs.

The necessity of some check on new development is shown by both of the two notable experiments in the stabilization of coal mining afforded by the history of the industry. The anthracite operators of Pennsylvania, by means of summer discount and storage, did succeed in eliminating seasonal fluctuations in production. At the same time, however, the small underground reserves of anthracite had set a natural limit beyond which development could not well proceed. The retardation of development enabled production—now equalized throughout the year—to overtake mine capacity. In 1918 the anthracite region averaged 293 working days, or almost theoretically full time. Even in 1919, a decidedly abnormal year, the working time was 266 days.[37]

In like manner the essential object of the German coal syndicate of Essen was to limit competition in overdevelopment and overproduction. The conditions leading to the formation of the syndicate—rapid development, overproduction, irregular demand, and sharp fluctuations in price—remind one strongly of the conditions in many coal fields of the United States today.

How far the industry itself can go in checking overdevelopment, in view of our present anti-trust laws, is a question. During the crowded four years from 1916 to 1920 forces have been at work which tend to a unification of policy and of interest. We hear of consolidations of strong companies within the same field; of acquisition by prosperous concerns in one field of properties in rival fields; of heavy investments in captive mines by industrial consumers and railroads. We have seen an increase in the number of operators' associations and in the work done by them, which culminated in the formation of the National Coal Association in 1917. The experience which the operators obtained during the war compelled them to get together and to adopt, for the time being at least, a national viewpoint. Not the least potent influence toward unification has been the prosperity attained during the war, which lifted the industry from a condition of near-insolvency and set it on its feet. This prosperity alone has provided a larger working capital and made possible the purchase of machines, improvements in mining practice, and a general improvement in technical efficiency.

But while these forces have been tending toward unified operation a set of opposing forces has been at work in the other direction. The

[37] U. S. Geological Survey, *Weekly Coal Report No. 169*, p. 7, October 9, 1920.

high prices and attractive profits and the magnitude of the war-time demand have resulted in an extraordinary enlargement of mine capacity. It is a question which of the opposing forces has made the greater headway. One fact is fairly clear. The tendency to combine has not gone far enough to squeeze out the water. The discrepancy between capacity and demand is probably greater now than it was in August, 1914.

Were the coal operators the only ones affected by the overdevelopment the public might with reason refuse to accept any responsibility in the matter, but after all it is the coal-consuming public that must pay for the whole expensive business. We must see our underground reserves depleted most wastefully, not because the operator is unaware of the loss, but because to him it is not waste but a response to the dictates of competition. We must pay the labor and capital engaged in coal mining, not only for the 215 days during which they work but for the 93 days during which they are idle. We must pay the railroads of the Middle West charges and depreciation on the coal cars that lie idle in summer. We hear talk of the social cost of universal military training. The number of men-days of enforced idleness in bituminous mining in the United States is equivalent to the loss of time involved in giving three months' military training to the year's class of all the young men in the country—truly a large price to pay for the blessings of competition in a single industry.

In thus outlining some of the evils of unlimited competition, the writer has ignored but not forgotten the problems which would be raised by the alternative. Combination in any form would probably necessitate fundamental readjustments of the public's relation to the coal business and would involve precedents of far-reaching significance, applicable to other industries. The discussion of what those readjustments should be, if any, is left to other and wiser students of the coal industry.

# COST, PRICES, AND PROFITS OF THE BITUMINOUS COAL INDUSTRY

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## I. Costs

*Prewar statistics.*—Mr. Lesher has already referred you to the depressed condition in the bituminous coal industry during the years immediately preceding the war, which led to the request on the part of many operators for an investigation of the industry by the Federal Trade Commission in an effort to find remedies. The Rainey Resolution directing such investigation was passed by Congress in August, 1916. As soon as the Commission began its work, it encountered the greatest difficulty in getting at the facts, due to the backward state of cost accounting in the industry. In fact, at conferences held with operators at Chicago and Cleveland, in the fall of 1916, the Commission was urged by them to use its compulsory powers to establish, through a cost reporting system, a uniformity of cost accounting which, through its educational value, would promote stabilization in the industry. The Commission at that time felt itself unable to undertake such a step. About a year later, during the war emergency and after the passage of the Lever Act, and after the fixing of maximum prices for bituminous coal, and the establishment of the Fuel Administration to control the coal industry, the Commission, at the request of Dr. Garfield, did use its compulsory powers to install a monthly cost reporting system.

*Brief sketch of Federal Trade Commission's cost work.* Costs which were obtained directly from the operators' books by the Commission's own agents covered operators producing some 75,000,000 tons annually. Costs also were obtained through the monthly cost reporting system, and through data filed for 1916 and 1917 by operators in support of claims for revision of prices. The reasons for the installation of this system of cost reporting was to secure information on which governmental regulation of prices could be based. There were many difficulties encountered in installing the system. The burden placed on operators was especially heavy at the start. There was necessarily much delay in reporting; also there were difficulties met in the compilation and revision of the returns, after they had been collected. There has been criticism that changes of the cost forms were made from time to time by the Commission. The reason for such changes was that experience showed them to be highly desirable if the information collected was to meet the primary aim—to secure information needed for governmental regulation. There was also a secondary aim, which was to help the operator by furnishing him information that he needed con-

cerning conditions in the industry. For example, the wage increase, which Dr. Garfield was called to determine in November, 1917, showed the need for an absolutely clear distinction between labor and supply costs. While the 1917 form called for this distinction, many operators reported these two costs in combined form, and the 1918 form was altered to make the distinction much more clear. The value of this alteration in form was clearly evident when the information thus made available through the 1918 form was used by Dr. Garfield in the settlement of the November, 1919, strike. The 1919 form (never used) and the 1920 form (used for the reports from Jan.-June, 1920) were designed, not with the primary idea of governmental regulation, but of gathering and making public useful information, and at the same time placing as little a burden as possible on the reporting operator.

*Extent of bituminous cost work.* About 95 per cent of the soft coal tonnage mined from August, 1917, to December, 1918, was covered in Federal Trade Commission cost work. The chief divisions of cost (labor, supplies, general expense, making up total f.o.b. mine cost) together with sales realization, have been published in a series of six reports—No. 1 and Nos. 3-7 (No. 2 covered anthracite). In addition to showing detailed costs for 1918, for about 95 per cent of the tonnage, average costs are shown on a representative quantity of tonnage in a number of fields, for 1916, 1917, and 1918. Some 300 operators producing about 125,000,000 tons annually in 28 districts are included in these statistics. In the 1920 cost work, figures were obtained for a much smaller proportion of the total output. The 1918 statistics cover the costs of 2483 operators throughout the year. The January, 1920, bulletin covered returns from 1589 operators. When the bulletins were discontinued with the June number, the number of operators was 555.

*Nature of the Federal Trade Commission costs.* Information *collected* shows minor subdivisions of labor and supplies costs—grouped by nature of the mining operations such as mining, transportation, drainage, etc., and the chief subdivisions of general expense (or overhead) costs. Cost information *published* is in the nature of summaries showing labor cost, supplies cost, and general expense cost, the total of these three being the f.o.b. mine cost.

There are other factors than those enumerated above which are matters to be taken into consideration in price determination, but which are not definitely ascertainable from the monthly cost reports. They are largely matters either of study of the investment or of expert and professional judgment. The Federal Trade Commission has not yet undertaken, on an adequate scale, a study of the investment.

The costs shown by the Federal Trade Commission are not intended

to include any of the following items: reserves for uninsurable hazards, such as mine fires, floods, cave-ins, squeezes, strikes, or other similar causes contributing to destruction of property and idleness at the mines; extra cost development work done during the war and involving an increased risk in the recovery of the capital under a normal régime of prices of coal; selling expense, where a selling organization, other than the mine office force, is maintained in order to market the product; interest on the investment, including borrowed capital; allowances for income and excess profits taxes; profit on investment.

*Some cost generalizations.* It should be always kept in mind that each field has its own particular conditions, and that generalizations should be of a most guarded nature. It is possible, however, to point out a few general relationships which have been found to exist in the cost figures.

As a rule the labor cost forms from 70 to 80 per cent of the total f.o.b. mine cost, the supplies cost and general expense costs being about equal to each other. Despite the increases in cost from 1916 to 1918, these relationships seem to have been fairly constant. It is this relative steadiness of the three principal cost factors that is of great importance in throwing light on prewar conditions.

From the Federal Trade Commission, Quarterly Report No. 2, 1920, I quote the following figures, comparing costs for the first six months of 1920 with those of the same operators in 1918.

TABLE 1

| GENERAL COMPETITIVE REGION | No. of Operators | 1920 | | 1918 | |
|---|---|---|---|---|---|
| | | Production Jan.-June | f.o.b. mine cost per net ton | Average 6 months Production | f.o.b. mine cost per net ton |
| Central Competitive Interstate (a) | 131 | tons 14,355,638 | $ 2.20 | tons 17,285,504 | $ 1.83 |
| Eastern Adjacent (b).. | 122 | 9,361,185 | 2.39 | 10,760,443 | 1.90 |
| Western Adjacent (c)... | 28 | 2,513,222 | 2.34 | 2,830,655 | 2.01 |
| South'rn Appalachian (d) | 51 | 4,904,907 | 2.70 | 5,017,686 | 2.24 |
| Southw'st'rn Int'rstate(e) | 71 | 2,603,594 | 3.19 | 3,208,933 | 2.61 |
| Rocky Mountain (f).... | 57 | 10,798,592 | 2.57 | 11,574,717 | 2.12 |
| United States ..... | 460 | 44,537,138 | 2.45 | 50,677,938 | 2.01 |

(a) Includes all of Illinois, Indiana, Ohio, and the Southwest District of Pennsylvania.
(b) Includes all of Maryland, West Virginia, Virginia, and the Central District of Pennsylvania.
(c) Includes all of Michigan, Iowa, and District No. 1 of Kentucky.
(d) Includes all of Alabama, Tennessee, and Districts Nos. 2, 3, and 4 of Kentucky.
(e) Includes all of Missouri, Kansas, Arkansas, Oklahoma and Texas.
(f) Includes all of Colorado, New Mexico, North Dakota, Montana, Wyoming, Utah, and Washington.

## II. Prices

*The nature of bituminous coal prices.* Coal prices are of two kinds —those which apply to coal sold under contract, and those which cover "spot" or market sales.

This fundamental difference must be kept in mind in all price discussions on bituminous coal. Coal contracts usually cover shipments over several months—often a year. As a rule, in mines east of the Mississippi River the contracts terminate on March 31, the end of the so-called "coal year." Usually, but not always, "spot" prices are somewhat higher than contract prices for the product of the same mines, also the "spot" prices are subject to much greater fluctuations. The extreme fluctuation of "spot" prices may be judged from the following figures, compiled from Mr. Lesher's report on Prices of Coal and Coke 1913-1918. The statistics are for the Pittsburgh field and the combined Somerset and Cambria fields in Pennsylvania, and for the combined New River and Pocahontas fields in West Virginia. They show low and high monthly prices and average.

Table 2

| | 1915 | | | 1916 | | | 1917 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Jan.–Dec. | | | Jan.–Dec. | | | Jan.–August | | |
| | Low | High | Avg. | Low | High | Avg. | Low | High | Avg. |
| Pittsburgh | $ .93 | $1.18 | $1.04 | $1.27 | $4.92 | $2.07 | $3.25 | $5.21 | $4.72 |
| Somerset & Cambria | $1.23 | 2.03 | 1.31 | 1.38 | 5.13 | 2.31 | 3.54 | 5.48 | 4.25 |
| New River & Pocahontas | $1.12 | 1.29 | 1.22 | 1.24 | 5.30 | 2.13 | 3.48 | 5.34 | 4.56 |

The extreme range of these prices in 1916 and 1917 down to August 1917, when governmental price fixing took place August 21, 1917, is in sharp contrast to the 1915 ranges for the same fields.

It is usually estimated that the proportion of the total bituminous coal output which is sold under contract is from 70 to 80 per cent of the production. There are few published figures to rely on—and of course the proportion would vary widely from field to field—especially where a considerable part of the output goes into domestic use. It is highest where the output is almost wholly put to industrial use. The following statistics, taken from the Federal Trade Commission Cost Report No. 1—Pennsylvania Bituminous, show the result of an investigation made into the conditions in May, 1917, of 420 operators in seven counties of Central Pennsylvania. The statistics cover the sales realizations on 4,755,699 tons. This was disposed of as follows:—

Contract sales .....81 per cent.....$2.43 avg. price per ton
"Spot" sales .....19 per cent..... 4.14 avg. price per ton

The operators are frequently charged, in times of scarcity of coal at points of consumption, with neglecting their contract obligations, in order to have more coal to sell at the extreme "spot" prices. There is considerable evidence that, at times, some of the less responsible operators have done this. However, such practices are not at all confined to the coal industry. Furthermore, the figures of actual sales realization, whenever gathered on a large scale, indicate that most of the operators are reasonably careful in carrying out their contracts. The public, however, seeing the extreme "spot" coal prices and not realizing how great a proportion of the output, at all times, moves under contract prices, is likely to misjudge the operator, and is prone to charge him with profiteering on the coal he has obtained through violation of contracts.

*The Fuel Administration price fixing.* The Fuel Administration in its price fixing had to keep in mind two objects: that production must be stimulated to the highest point allowed by the available transportation facilities for handling the output; and that the price must be not unduly burdensome in view of this requirement to promote production. The fundamental data on which the Engineer's Committee had to work was the cost information gathered by the Federal Trade Commission. This was studied by them and such adjustments made as they, in the light of their years of practical experience, judged were necessary. They had often to change the areas of the districts over which a uniform price was established. Their idea was, as far as possible, to group together mines which had a substantial similarity of operating conditions, especially such as affected costs. All the costs for a district were then plotted on a curve; and, when the final districting was complete, it would be found that the great majority of the costs—generally about 80 per cent—would be grouped within a narrow range, the upper limit of which was taken as the "bulk line" so-called. To this bulk line was added the necessary margin which was to provide for such expenses and contingences as were not covered in the cost figures, but should properly be considered in the fixing of prices, especially prices designed to stimulate production. On the figures thus reached, Dr. Garfield established his official prices.

The effect of the official prices, on production and on sales realization, varied greatly from field to field and from time to time. In some fields effect of the control exercised is much more evident than in others. In the Federal Trade Cost Reports this subject, besides being discussed in detail in connection with the statistics of the various districts, is summarized in the concluding chapter of Reports Nos. 4-7 under the heads of "Effect of Governmental Price Regulations on Sales Realiza-

tions" and "Effect of Margins on Production." The subject involves too much detailed analysis to discuss here.

*Course of the market after regulation was lifted.* About the only information on the prices of the early part of 1919, other than what can be arrived at for "spot" prices quoted in the coal trade journals, is the statistics furnished the Frelinghuysen Senate Committee by the National Coal Association. These prices collected by the Association from the operators' reports to it were reduced to run-of-mine basis. Twelve fields were covered. The prices, together with the last Fuel Administration price in effect for the field (prices in effect Jan. 31, 1919), are shown in the following table. These prices are practically "sales realization."

TABLE 3

| Field | Fuel Administration Price in Effect Jan. 31 | April | May | June | July | August |
|---|---|---|---|---|---|---|
| Pittsburgh | $2.35 | $2.32 | $2.32 | $2.35 | $2.37 | $2.47 |
| Central Pa. | 2.95 | 2.81 | 2.65 | 2.63 | 2.74 | 2.65 |
| Northwest Pa. | 2.95 | 2.52 | 2.40 | 2.56 | 2.31 | 2.45 |
| Eastern Ohio | 2.35 | 2.23 | 1.90 | 2.05 (a) | 1.89 | 2.15 |
| Southern Ohio | 2.60 | 2.28 | 2.22 | 2.17 (b) | 2.15 | —— |
| Southern Ill. | 2.35 | 2.38 | 2.44 | 2.43 | 2.45 | 2.48 |
| Central Ill. | 2.35 | 2.16 | 2.15 | 2.15 | 2.17 | 2.17 |
| Indiana | 2.35 | 2.21 | 2.16 | 2.18 | 2.16 | —— |
| Harlam Field Ky. | 2.55 | 2.64 | 2.50 | 2.55 | 2.59 | 3.07 |
| Hazard Field Ky. | 2.55 | 2.48 | 2.56 | 2.46 | 2.80 | —— |
| Smokeless Fld. W. Va. | 2.51 | 2.79 | 2.75 | 2.74 | 2.94 | 3.05 |
| Northern W. Va. | 2.50 | 2.39 | 2.34 | 2.27 | 2.21 | 2.46 |

a. Includes sales for Lake season.
b. Does not include railroad fuel estimated average $2.00 per ton.

Of the above 12 fields it may be noted that in the case of three—the Harlam field in Kentucky, the Southern field in Illinois, and the Smokeless (New River and Pocahontas) field in West Virginia—the uncontrolled prices April-July were higher than the government prices of January 31.

The following figures show a comparison between the Fuel Administration prices of January 31 and the average. It will be noted that in but one field, Smokeless (W. Va.), was there an increase of over 10 per cent; in the case of four fields, the Southern (Ill.), the Harlam (Ky.), the Pittsburgh (Pa.), and the Hazard (Ky.) fields, there was little net change (less than 5 per cent advance or decrease). In the case of three fields there was a decline of 7 to 8 per cent, and in the case of three fields there was a decline of over 10 per cent.

Inasmuch as costs, because of the falling off of production, were probably as high or higher than during the previous year, it is difficult to see how the operators can be considered at this period (early in

TABLE 4

| FIELD | Fuel Adm. price Jan. 31, 1920 | Average price Apr.-July 1920 | Increase or decrease |
|---|---|---|---|
| Smokeless (New River & Pocahontas, W. Va.) | $2.51 | $2.80 | I 12% |
| Southern (Ill.) | 2.35 | 2.42 | I 3 |
| Harlam (Ky.) | 2.55 | 2.57 | I 1 |
| Pittsburgh (Pa.) | 2.35 | 2.34 | D 1 |
| Hazard (Ky.) | 2.55 | 2.45 | D 4 |
| Indiana | 2.35 | 2.18 | D 7 |
| Central (Ill.) | 2.35 | 2.16 | D 8 |
| Northern (W. Va.) | 2.50 | 2.30 | D 8 |
| Central (Pa.) | 2.95 | 2.71 | D 8 |
| Eastern (Ohio) | 2.35 | 2.02 | D 14 |
| Southern (Ohio) | 2.35 | 2.20 | D 17 |
| North West (Pa.) | 2.95 | 2.45 | D 17 |

I—Increase.
D—Decrease.

1919) as having asked unreasonable prices for their product. It should be pointed out, in explanation of the increase in price for the Smokeless field, that this is the coal most in demand for export.

From the Federal Trade Commission Quarterly Report already cited, the following figures of sales realization are taken, showing a comparison of 1918 with the first six months of 1920.

TABLE 5

| GENERAL COMPETITIVE REGION | No. of Operators | 1920 | | 1918 | |
|---|---|---|---|---|---|
| | | Jan.-June Production | Sales realization per net ton | Average 6 months Production | Sales realization per net ton |
| Central Competitive Interstate.. | 131 | tons 14,355,638 | $ 2.68 | tons 17,285,504 | $ 2.36 |
| Eastern Adjacent. | 122 | 9,361,185 | 3.12 | 10,760,443 | 2.63 |
| Western Adjacent. | 28 | 2,513,222 | 2.84 | 2,830,655 | 2.54 |
| Southern Appalachian ..... | 51 | 4,904,907 | 3.37 | 5,017,686 | 2.74 |
| Southwestern Interstate ..... | 71 | 2,603,594 | 3.47 | 3,208,933 | 3.00 |
| Rocky Mountain .. | 51 | 10,798,592 | 3.09 | 11,574,717 | 2.60 |
| United States..... | 460 | 44,537,138 | 3.00 | 50,677,938 | 2.56 |

## III. PROFITS

No information is now at hand to show to what extent operator, middleman, or retailer in the coal industry has, as a class, profited by exorbitant prices. Tonnage actually handled must be considered to determine this, since transportation difficulties have not affected all to the same degree.

No information on investment of sufficient definiteness and accuracy to be of scientific value is yet available. Obviously a detailed knowledge of the character and amount of the investment—which varies widely from field to field—is necessary to arrive at profits. Figures for the industry as a whole, such as appear in the U. S. Bituminous Coal Commission Report, which lump together returns from 1551 operators all over the country who represented about one-third of the coal tonnage produced in 1918, are not definite enough for practical use in connection with costs or prices of different fields.

While the margin between the sales realization and the f.o.b. mine cost, as compiled by the Federal Trade Commission, furnishes no exact measure of profit, and is likely to be misleading if an attempt is made to use it for comparison between fields—because of the wide difference in mining conditions, investment, and relative high or low cost of operation—yet it is of considerable value in throwing light on the changed conditions in a given field at different periods of time. For example, for the following eight important fields it was possible to get costs and sales realizations by months for part or all of 1916, as well as 1917 and 1918.

The margins for January-March, 1916; April-October, 1916; and November, 1916-March, 1917 (the period after the "spot" market began to rise violently, but before the 1916 contracts expired)—throw much light on the prewar situation which led to the passage of the Rainey Resolution in August, 1916. The 1918 output of the operators is stated to show that the figures can be considered representative.

TABLE 6

| District | Number of Operators | 1918 Output | Jan.-Mar., 1916 | April-Oct., 1916 | Nov., 1916-Mar., 1917 |
|---|---|---|---|---|---|
| | | | per ton | per ton | per ton |
| Ill. District—2.... | 5 | 1,500,000 | — | $0.05(a) | $0.44 |
| Ill. District—3.... | 7 | 13,000,000 | — | .08(b) | .44 |
| Ill. District—4.... | 2 | 2,250,000 | .06 | .01 | .39 |
| Ill. District—6.... | 13 | 12,000,000 | — | .12 | .68 |
| Ind. Bituminous... | 33 | 14,000,000 | — | .07 | .62 |
| Mich. State ..... | 4 | 1,200,000 | — | .16(b) | .91 |
| W. Va. Pocahontas | 22 | 9,000,000 | .32 | .34 | .67 |
| W. Va. New River | 10 | 2,500,000 | .13 | .23 | .48 |
| W. Va. New River | 27(c) | 6,000,000(c) | — | .22(c) | .48(c) |

(a) May-Oct.
(b) July-Oct.
(c) Given for purposes of comparison with the figures of 10 operators in the same field.

The effect of the much more rapid increase of price over the increase in cost during November, 1916-March, 1917, is clearly evident by the increased margins.

Similar figures follow for 14 important districts (including the Pocahontas and New River fields also shown in the preceding table), the comparison in this case being of yearly margins for 1916, 1917, and 1918, and of the percentage which such margins form of each dollar of sales realizations.

TABLE 7

| District | No. of operators | 1918 Output | Actual margin per net ton | | | Proportion of each dollar paid by purchasers | | |
|---|---|---|---|---|---|---|---|---|
| | | | 1916 | 1917 | 1918 | 1916 | 1917 | 1918 |
| | | | $ | $ | $ | % | % | % |
| Southwest Pa. | 17 | 23,000,000 | .17 | 1.12 | .60 | 13 | 42 | 24 |
| Central Pa. | 33 | 9,000,000 | .08 | .92 | .78 | 6 | 32 | 25 |
| Maryland. | 9 | 1,000,000 | .33 | 1.06 | .51 | 23 | 39 | 18 |
| West Va. Pocahontas | 22 | 9,000,000 | .37 | 1.15 | .89 | 30 | 49 | 35 |
| Tug River | 13 | 1,500,000 | .23 | 1.19 | .55 | 17 | 44 | 20 |
| New River | 10 | 2,500,000 | .24 | .95 | .81 | 19 | 40 | 29 |
| Ill. No. 1 | 10 | 2,250,000 | .03 | .33 | .42 | 2 | 13 | 13 |
| 4 | 2 | 2,250,000 | .10 | .31 | .40 | 9 | 19 | 19 |
| Ohio 3 | 6 | 2,750,000 | .21 | .82 | .55 | 15 | 36 | 21 |
| 5&9 | 5 | 4,750,000 | .21 | 1.13 | .86 | 17 | 46 | 33 |
| 8 | 14 | 7,500,000 | .21 | 1.09 | .68 | 23 | 49 | 28 |
| 6 | 12 | 1,750,000 | .30 | 1.20 | .73 | 20 | 42 | 25 |
| Kentucky No. 3. | 16 | 1,500,000 | .19 | 1.11 | .66 | 13 | 39 | 22 |
| Tennessee No. 1. | 15 | 1,300,000 | .01 | .74 | .44 | 1 | 28 | 14 |

The low margins for periods prior to November, 1916-March, 1917, shown in Table 6 throw considerable light on the condition of the industry during most of 1916. The yearly margins for 1916 shown in Table 7 include the high prices of November and December, 1916, and do not as accurately reflect conditions prior to 1916. The deduction, however, to be made from both tables indicates that the margin at that time formed but a relatively small part of the price paid by the purchaser. The principal component of the f.o.b. mine cost, as has been already pointed out, is the labor cost, which usually forms about 70 to 80 per cent. This labor cost is principally affected by changes in the wage scale, though it also is to some degree affected by changes in the tonnage produced. And, forming as it does the predominant item of cost, it has, in normal competitive conditions, a very direct effect on the prices asked, and hence on the sales realizations. The increase made in wages for a number of years prior to the war were relatively slight, so that their effect on prices was not marked. As a result the sales realization remained fairly constant from year to year. This may be deducted from the "average value" figures compiled from Geological Survey reports for four important eastern fields.

TABLE 8

| | Southwest Pa. average value | Central Pennsylvania | New River West Virginia | Pocahontas West Virginia |
|---|---|---|---|---|
| 1911 | $1.01 | $1.01 | $ .95 | $ .92 |
| 1912 | 1.04 | 1.05 | 1.00 | .97 |
| 1913 | 1.13 | 1.11 | 1.08 | 1.08 |
| 1914 | 1.06 | 1.07 | 1.10 | 1.08 |
| 1915 | 1.03 | 1.06 | 1.06 | 1.06 |
| 1916 | 1.28 | 1.30 | 1.25 | 1.19 |

The "average values" are not exactly the same as "sales realizations," since they include allowance for the estimated value of the coal used for power-house fuel at the mines. The actual "sales realizations" would be found to have been a few cents higher than the "average values" shown above.

It is evident from the slight changes in labor cost which took place from 1911-1915 inclusive that the conditions prior to November, 1916, had existed for several years. And while the picture of the alleged conditions in the industry set forth in the Rainey Resolution may have been overdrawn in some particulars, the evidence is overwhelming as to the general state of depression and demoralization of the coal industry at that time. This resolution is as follows:—

RAINEY RESOLUTION AUGUST, 1917

(House Resolution 352, Sixty-fourth Congress, first session.)

Whereas it is alleged that unfair methods of competition are widely practiced in the bituminous coal mining industry of the United States; and

Whereas it is alleged that in consequence thereof the industry in many districts has been demoralized financially and numerous operating companies have been forced into receiverships; and

Whereas it is also alleged that in consequence thereof some 200,000,000 tons of coal are permanently lost to the Nation each year by unwise and improvident methods of mining; and

Whereas it is further alleged that in consequence thereof some 500,000 employees at the mines are kept idle from one fourth to one third of the working time, with much ensuing hardship and loss to themselves and those dependent upon them; and

Whereas such conditions, if existing in the bituminous-coal industry, vitally touch the interests and welfare of the public as a whole: Therefore, be it

*Resolved*, that the Federal Trade Commission be, and is hereby, directed to begin and make inquiry immediately into the conditions in the production and distribution of bituminous coal and to report the facts to Congress with recommendations.

## III. CONCLUSION

To be of practical value in the solution of the coal problems, the statistics of costs, prices, and profits, must relate to small, fairly homo-

geneous areas. The diversity of conditions found to exist between different fields in the same state (not to mention between mines in the same field) is such as to militate against broad generalizations. In a relatively few particulars can generalizations covering any large portion of the industry have even any theoretical value—and even in those caution must be used if their application to the problems of a particular field is in question. In view of the present trend of public opinion in calling on federal and state government for legislative and executive action, which affects the public utility aspects of the coal industry, and restricts the free play of such economic factors in production as the relations between employer and employed in regard to ways and conditions of employment, and in distribution such as control over the disposition of the product to different classes of purchasers, and the regulation of prices which may be changed, it is evident, that for the benefit of all concerned—whether operator, laborer, or consumer—there should be the fullest possible definite, detailed, impartial, authoritative information available alike to all, so that any constructive action contemplated either along the lines of legislative enactment or voluntary cooperation can be considered in the light of a full knowledge of present conditions.

# SELLING COAL

By George H. Cushing

*Managing Director of the American Wholesale Coal Association*

An eccentric English author once said that there were so many opinions as to how to use punctuation marks, he did not propose to employ any. Instead he would print several pages of them at the end of his book and would allow the reader to distribute them to suit his taste.

This paper is based on statistics. However, so many degrees of a simple lie can be told by figures—and I still have a semblance of respect for the truth—I propose to leave them, in so far as possible, out of the text. I will put all of them in at the end and will allow the reader to rearrange them into tables according to his liking.

The simple facts about bituminous coal are:

1. Reports were, in 1918, received by the U. S. Geological Survey from 11,038 mines.

2. Class I mines, numbering 821 with an average production of about 342,000 tons per year, produced 48.5 per cent of the coal output of 1918.

3. Mines numbering 929 comprised Class II with an average production of about 140,000 tons per year and produced 22.6 per cent of the 1918 coal.

4. Mines to the number of 1198 comprised Class III. They had an average production of about 72,500 tons per year and yielded 15 per cent of the coal in 1918.

5. Class IV consisted of 2636 mines. They had an average production of about 25,000 tons per year and were responsible for 11.7 per cent of the coal of 1918.

6. Class V comprised 5545 mines. They had an average annual production of 2337 tons and gave to the country 2.2 per cent of the 1918 coal.

The student of efficiency and the amateur economist would probably recommend that we dispense entirely with Class V mines; limit sharply the number of Class IV mines; and throw all of their manual and mechanical energy into converting Class II and III mines into Class I mines. Before following their advice, we might do well to consider: (1) that we never get statesmen without first having babies; (2) that when the big demand for coal in 1917 ripened into the titanic struggle to get coal in 1918, it was the small mines alone which gave the increase. That is, despite the fact that there ware 821 Class I mines in 1918, against 792 in 1917—a gain of 29—that group produced 4,363,619 less tons in 1918 than in 1917.

Indeed Class III, IV, and V mines—the insignificantly small mines of the nation—gave us all of our increased production in 1918, after first having made up some 3,000,000 tons loss to which Class I and II mines would have subjected the country.

Of course there are good reasons for this bad showing by the larger mines. Not the least important is the fact that the class I mines were managed by the best thinkers in the coal trade. Those men were forced to abandon their businesses to subordinates while they attended conferences, waded through investigations, and wasted their time and energies on equally fruitless efforts. Their duller associates had nothing to do but produce coal and did it.

Also, when Class III, IV, and V mines multiplied, and when the railroads had to serve them as well as their neighbors, the railroads having only a limited supply of cars could not serve all to 100 per cent, so that Class I and II mines necessarily fell below.

Finally, Class I mines quickly ran through their development work and, lacking men to extend it, had to lose production while they subtracted men from the face to drive the entries and turn the rooms.

Still it is a fact that the larger mines lost 3,000,000 tons while the smaller mines gained more than 30,000,000 tons, leaving the country with a net gain of about 28,000,000. It is not wise, therefore, to set out to destroy the mines which, while small today, give promise of being graduated into a higher class tomorrow, and which also serve as a factor of safety for the country when there is, due to any cause, a sudden expansion of demand.

The Class V mines—commonly called the "wagon mines" or "the snowbirds"—can be left out of any serious economic discussion of the future of the bituminous industry. They are like undertakers—we employ them only upon dreaded occasions; no one wants to use them; and still they are quite necessary. This leaves us with only the mines in Classes I to IV which may properly be said to be dependable. They represent all the normal and natural processes of nature in business, in that they grow from little to big and from young to old. It is with them that, in the long pull, the industry and the public has to deal. All told, in 1918, they numbered some 5584 and produced some 566,000,000 tons of coal. It is upon these mines that the country has to depend for its supply of coal in ordinary times. It is the effort to sell their produce which creates the merchandising problem of the coal industry.

When we come to discuss the sale of coal—or of anything else—we have to take things as we find them. We are not allowed to make them over, even for the purpose of discussion, according to any of our own theories. In the matter of selling coal—or anything else—the people

have been led to believe that the selling is not done properly unless it is done by men employed on salary, big or otherwise, under the immediate control of the producer.

There must be both sense and logic behind that or so many would not say and believe it. Personally I cannot see any reason to believe that a man who is a good producer must for that reason alone be also a good merchant. My experience with men leads me to think exactly the other way. Therefore I say: Leave production to the producer and selling to the merchant, or every man to his trade. But the public holds that if a man gets a producer's profit he will want no merchant's profit; and thus the public will get its goods cheaper. And I bow to the public and say: "Get something for nothing if you can, for that is the great game in life."

We, here, are not studying popular psychology, but general economics. It is one of the implied rules of general economics that for each distinct risk, investment, and effort there should be a comparable compensation. If we follow that theory, we must say that, since the production effort is one and the wholesaling effort another, they constitute two businesses. Each, therefore, should be compensated commensurately even though both are housed in the same edifice and officered by the same men.

So long, however, as the American people hold fast to their belief that the selling organization is virtuous only when controlled by the producer, we must try to let our minds go along with them unless we choose to make them unhappy. It is for us to study the exact annual tonnage which a producing company must have before it can afford to abandon reliance upon outside salesmen and sell its own coal by its controlled or salaried sales force.

To answer that question accurately, we must first understand at least this much: the coal produced within no state is sold wholly in that state. Thus, the meanest operator in the meanest coal state must have enough of a sales organization to sell his coal in at least two states. Some of our poorest coals have a market spread over at least five states. Our best bituminous coals sell in some eighteen or twenty states. It is probably true that on the average the market for coal of one state is in seven states. The task of the producer who wants to sell all of his own coal is to get enough tonnage to pay the expenses of a sales organization large enough to cover seven states.

It is a matter of common knowledge that in the days of competition freed from government control the selling margin ranged close to 7½ cents per ton of mine-run coal. On that basis, the theory of the coal trade was that mines which had only 50,000 tons of annual production —those in Class IV—were wholly dependent upon others to sell their

coal. The man with a million tons of production was supposed to be independent of others. In between, there were all possible variations of modified dependence and modified independence. This leads me to this conclusion: the importance of an independent selling organization to a producer decreases directly in proportion to the producers' increase in tonnage, but under all conditions increases directly in proportion to the distance between the mine and the market.

Financial alliances in the coal fields are so complex that it has been impossible for me to get the exact data as to the number of companies which have a sufficient tonnage to support an independent selling organization. I venture to believe, however, that there are not to exceed seventy-five companies in the United States which could, if they were so disposed, stand the financial strain of selling all of their own coal. All of the others depend in whole or in some part upon independent selling organizations.

To get a working hypothesis, I have assumed arbitrarily that all of the mines in Class I dispose of their own coal without any help from outside their organization. This is by no means true.

I have assumed further that 40 per cent of the mines in Class II have also sold their own coal. This leaves 60 per cent of the mines in Class II and also of the mines in Classes III, IV, and V as wholly dependent upon the wholesale merchants. This means that, because the others cannot afford to sell their own coal, the wholesalers are obliged to market 246,000,000 tons of coal per year, or 42.46 per cent of the total production in 1918.

Knowing what I do about the mines in Classes I and II, I believe it is safely within the truth to say that from 55,000,000 to 60,000,000 tons more of their production is handled through wholesalers. This would mean that the wholesalers annually market in excess of 300,000,000 tons, or about 55 per cent.

This estimate is made tenable by the fact previously stated that in times of harsh competition the sales margin on coal averaged close to 7.3 per cent per ton of mine-run coal. On any such income per ton, a Class I mine, with an annual production of 340,000 tons, would have a sales revenue of only about $19,500.

The same thing is true if you say that a company in Class I is of the average size of the coal companies of the nation—has one and one-quarter mines. Even such an average company would have a revenue from sales of only a little more than $24,000 per year. With any such meager revenue, a company could not maintain salesmen traveling over seven states, endure the losses due to bad credits, pay the demurrage and reconsigning charges, and make the customary allowances in the settlement of claims. So little money will not travel so far.

This leads me to my second conclusion, namely, that the narrow selling margins per ton and the limited tonnage available to each company have necessarily thrown the merchandising work into the hands of organizations wholly independent of the producer.

Still addressing my remarks to the holder of the prevalent notion that the producer ought to sell the coal he mines merely because he is the producer—and quite regardless of his capacity as a merchant—I want to explain briefly what has prevented the development of a sane or sound merchandising system in coal.

When the producer attempted to turn merchant as well, he was still thinking with the mind of a producer. Necessarily he focused his whole attention upon the mine price. To his mind, production was all there was of the coal business. He thought that merchandising was a necessary but unmitigated evil. He therefore wanted to pay as little as possible to sell his coal because every penny of selling cost was going to be subtracted from his mine price. He never thought of making the sales organization over into a separate business, earning a separate margin and hence returning a separate profit. Instead, he clung to the old theory, starved his salesmen, and dwarfed his merchandising policy. The sales representatives of coal mines have struggled along on an income which was even less than that of the bank employee. When I say that much I realize that condemnation can go no farther. The salesman employed by the operator soon learned that there was no hope of a future in that direction; therefore, as quickly as opportunity or his finances would allow, he set up in business for himself. This set up in the coal industry a group of men who had every disposition to be friendly to the operator because he was their source of supply, but who were forced to become competitors because of the operator's merchandising policy.

As this competition became keen, the operators who control large tonnages came to set themselves solidly against these independent merchants. In the fierce struggle for existence which ensued, the tendency was for the producers to advocate the destruction of the independent merchants and for the independent merchants to throw their support to the small competitor of the bigger operator. The result of course was to increase competition which already was ruinous, and to reduce the already extremely narrow sales margin. If under these conditions the independent merchant wanted more money for himself—which of course he did—he had only two ways of getting it: (1) to beat down the mine price which he paid to the operator, while still getting a fair price from the user; (2) to cut the cost of making sales by having a greater assortment of coals to offer. This latter would allow him to

make the maximum of sales with the minimum outlay of travelling expenses.

Indeed, the independent merchant resorted to both methods of enhancing his revenue.

This merchandising system prevented the operator who had a limited assortment of coals and who could not profit by cutting his mine price from getting that revenue from his sales department which, as his tonnage grew, would make him financially independent of these auxiliary selling organizations. In fact, this system tended naturally to broaden and strengthen the hold which the independent merchant had upon the trade.

At the same time, it prevented independent merchants, no matter how great their skill as merchants, from getting that revenue out of a volume of sales which would allow them to develop into large merchandising houses. The upshot of the matter was that the merchandising of coal was increasingly in the hands of independent merchants, and that they were necessarily small and numerous.

Coming now to the conclusion, it is apparent that the one thing which has stood in the way of a real merchandising program in coal has been the insistence of coal men in the past that the selling expense should be subtracted from the mine price rather than added to it.

It has been my theory for years, and still is, that the coal industry will never develop a merchandising policy that is worthy the name until it separates production from wholesaling and attaches a commensurate margin to each. Personally, I believe that the act of production ends with the coal loaded on a car under the tipple, and that the man who produces that coal should get a price for it which gives him his cost plus a profit. Personally, I believe that the act of wholesaling begins with the coal loaded on the car and carries it through until finally disposed of. I also believe that there should be a separate margin covering that service. Incidentally our Association has taken that same position.

Our recommendations which go beyond this statement of principle are confessedly makeshift. We have proposed that, until a better plan is worked out, the margin for the merchant should be a minimum of 8 per cent of the quoted basis. Frankly, that proposal will not stand extensive cross-examination. It is therefore temporary. But it will have to serve until we can get time to think this question through and work out a more sound recommendation.

It is proper to inquire why no more thought has been devoted to this vital subject in the two years which have elapsed since we announced the principle and arrived at this rather rough and ready recommendation.

I deem it a sufficient answer to say that out of the 24 months I and

the members of our executive committee have had only three weeks which we could devote to such a study. The other 23 months and one week have been devoted entirely to the defense of the industry against attacks upon it made by public officials. I do not want it understood that I resent the fact that officials of the government wish to inform themselves about coal. I do believe that when only 4 per cent of the time is allowed for constructive work and when 96 per cent of our time has been necessarily devoted to defense, a disproportionate amount of the time of an Association such as ours has been expended in unproductive work. Until we have had time to think our merchandising program through, we should be freed from the necessity of attending many investigations. Even our half-baked ideas on the merchandising side of the coal business would, if applied to the industry as it now stands, result in great developments of a forward looking character.

We will admit for the purpose of argument that it is the proper theory that the producer should also be the merchant. We will admit, therefore, that benefit to the greatest number will come from the producer selling as well as mining his coal. It is desirable, therefore, to put him in a position to develop a selling force. We will assume that our ideas are carried into effect and that an 8 per cent selling margin is added to the producer's mine price and is paid to whoever earns it. The operator, under those circumstances, is encouraged to get a profit by building a selling organization. The selling organization pays from the start all of its expenses and, as its tonnage grows, begins to make a little money. This naturally encourages the operator to build up his selling organization.

Naturally, at first, he sells only to those customers who buy big tonnages. Afterwards he naturally expands to cover the entire field. The tendency, therefore, is for the mine to build up a selling organization.

In the meantime, the independent merchant begins to get a revenue which allows him a little more than the mere cost of doing business. Money always has a tendency to return to the place where it was made. If a merchant makes money out of selling coal, he naturally reinvests that money in that same line of business. Therefore, the tendency is and will be for the coal merchandising houses to grow from little to big.

Thus there will grow up bigger sales organizations controlled by mines and bigger independent merchants. In the end the trade will have healthy competition in selling, but the units will be larger and more serviceable.

My associates and I are convinced that in a very short time the carrying out of this policy will result in the development of those selling organizations which the statistics of the trade indicate are necessary to take care of peculiar needs of the industry.

We are all very much concerned to see a proper merchandising policy develop because we are going to need some real coal merchants. I am firmly convinced that nothing but a pronounced export policy will either stabilize this industry, assure the solvency of the American merchant marine, or put a firm foundation under our exports of other things. I am firmly convinced that we shall never develop a proper export coal program without coal merchants. I am equally convinced that we shall never develop coal merchants unless we set out studiously to create merchants by adding a merchandising price to the mine price.

COAL STATISTICS

Production by Classes of Mines

| Group | 1918 | | 1917 | |
|---|---|---|---|---|
| | Total | Av. per mine | Total | Av. per mine |
| Class I | 281,002,122 | 342,268 | 295,365,741 | 360,310 |
| Class II | 130,941,195 | 140,947 | 129,485,524 | 141,669 |
| Class III | 86,907,873 | 72,544 | 47,894,269 | 71,738 |
| Class IV | 67,788,140 | 25,000 | 51,596,000 | 25,850 |
| Class V | 12,746,488 | 2,337 | 10,499,029 | 1,775 |

Number of mines per group

| | 1918 | 1917 | Gain |
|---|---|---|---|
| Class I | 821 | 792 | 29 |
| Class II | 929 | 914 | 15 |
| Class III | 1198 | 1040 | 158 |
| Class IV | 2636 | 1996 | 640 |
| Class V | 5454 | 5888 | *434 |

Tonnage Gains in 1918 over 1917 by Groups

| | |
|---|---|
| Class I | *4,363,619 |
| Class II | 1,455,671 |
| Class III | 12,013,604 |
| Class IV | 16,192,140 |
| Class V | 2,297,459 |

* Loss.

Dependable Mines (1918)

| | Mines | Output |
|---|---|---|
| Class I | 821 | 281,002,122 |
| Class II | 929 | 130,941,195 |
| Class III | 1198 | 86,907,873 |
| Class IV | 2636 | 67,788,140 |
| Total | 5584 | 566,639,330 |

| | |
|---|---|
| Average Output per Mine per Year | 101,475 |
| " " " " " Day | 407.5 |
| (249 working days per year) | |
| Average Number Mines per Company | 1.26 |
| Average Tonnage per Company | 127,858.5 |
| " " " " per day | 513.45 |

**Bituminous Coal Sold by Independent Merchants**

| | |
|---|---|
| Class II | 78,565,717 or 60% of Class II |
| Class III | 86,907,873 |
| Class IV | 67,783,140 |
| Class V | 12,746,880— 42.46% of total |

**Selling Revenue (1918 basis) by Groups (old and new basis)**

| Group | Average Tonnage | Revenue (old basis, 7½c ton) | Revenue (new basis, 8%) |
|---|---|---|---|
| Class I | 342,268 | $19,670.10 | $53,762.88 |
| Class II | 140,947 | 10,571.02 | 22,551.52 |
| Class III | 72,544 | 5,440.80 | 11,607.04 |
| Class IV | 25,000 | ..... | ..... |
| Class V | 2,164 | ..... | ..... |

# THE TRANSPORTATION PROBLEM IN THE BITUMINOUS COAL INDUSTRY

By A. G. Gutheim

*Manager, Public Relations Section, American Railway Association*

The first evidence of difficulty in the transportation of bituminous coal is a coal car shortage,—that is, an inability on the part of the railroads regularly and adequately to meet the demands of the mines for empty cars in which to load and ship their production to market. Coal car shortages have been so serious and so nearly continuous for the past four years that there is a tendency to forget that the situation previously was just the reverse. For many years prior to the late summer of 1916 there customarily existed in this country a surplus of cars available for coal loading in excess of all demands therefor, almost 90 per cent of the time. The occasional coal car shortages were strictly seasonal and local; nation wide or long continued difficulties of this sort were unknown.

The seasonal and local car shortage is the result of a sudden and heavy demand for coal which comes late each summer in anticipation of, and is later accentuated by, the arrival of cold weather. The cure of such difficulties is more with the consuming public than with the producers and carriers. The former may, with little if any loss, purchase and store their extraordinary winter's coal requirements, in part at least, earlier in the season, when mine and transportation facilities are not as a rule fully utilized. But the latter, in effecting a cure, must mine and transport with even greater intensity during the period of strong demand. This would require larger investment in mining and transportation equipment and more employees in those industries; and this is something to be avoided where possible, and certainly in the bituminous coal mining industry. On this point no argument is needed beyond the very first conclusion announced in the recent report of Mr. Hoover's Committee on the Stabilization of the Bituminous Coal Industry of the American Institute of Mining and Metallurgical Engineers.

If the future held in store no more serious problems in bituminous coal transportation than those customarily met with prior to 1916, the subject could be dismissed as not of particular importance. But our experience since 1916 has been distressing, and at times attended with danger. That experience warrants serious consideration of its causes, and the best endeavors of all concerned to eliminate those causes henceforth.

## General Effect of the War

War is essentially a consumer of iron and steel, and iron and steel production depends mainly on coal, coke, ore, and fluxing materials as

the basic raw commodities. Moreover, fuel is relatively a greater factor in iron and steel production than in most other lines of manufacture. The shift from peace to war industry called for extraordinary coal production long before we entered the war, and our activity as a belligerent greatly increased this demand. Simultaneously came greater demands for the other basic commodities of iron and steel production. All these commodities are invariably shipped in bulk and usually and by preference require open-top cars, commonly called coal cars, for transportation.

The territory Chicago, St. Louis and east thereof, and north of the Ohio and Potomac Rivers, is the great workshop of our country. It is the location of by far the greater part of our population, and the greatest density of population and traffic. If to its bituminous coal production is added that of the bordering states of Virginia, West Virginia, and Kentucky, largely consumed in this great workshop, we account for fully 75 per cent of our total bituminous production. In this territory are located our great centers of iron and steel manufactures, producing perhaps 80 per cent of all our iron and steel articles. On its Lake Erie shore are the docks over which the regions beyond the lakes obtain their annual requirements of twenty-five to thirty million tons of coal and in return send their double quantity of ore. On its North Atlantic Coast are great tidewater coal piers transshipping millions of tons of coastwise and export coal, both anthracite and bituminous, annually. There also are located the ports through which, first for convenience, and later for convenience and necessity, was handled most of the tremendous overseas movement of men and materials from 1915 on. And throughout this period, freight and troop movements within and to and from this territory, east, west, north, and south, were conducted on lines of railroad never built to carry this concentrated load, and claimed by the owners to have been stunted in development during several years preceding by hostile, or at least unwise, policies of government regulation. Furthermore, many of the more important gateways through which this war traffic had of necessity to move, were manufacturing cities of major importance in the war program, which were then undergoing great industrial expansion and development, without contemporaneous development of their railroad facilities. Nothing, perhaps, more clearly emphasizes the stress in this territory than the action of the War Industries Board, toward the close of actual hostilities, designed to effectually limit any further location of industry in the eastern portion thereof.

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It would be just criticism of this paper to say that thus far many words have been used to outline a situation which the French sufficiently describe by a shrug of the shoulders and the comment, "C'est la

guerre." The truth is that the war was the primary cause of our coal transportation difficulties, and as indicative of this, note the trend of bituminous coal production in the United States in recent calendar years:

| | | |
|---|---|---|
| 1910 | 417,111,000 | net tons |
| 1911 | 405,907,000 | " " |
| 1912 | 450,105,000 | " " |
| 1913 | 478,436,000 | " " |
| 1914 | 422,701,000 | " " |
| 1915 | 442,622,000 | " " |
| 1916 | 502,523,000 | " " |
| 1917 | 551,791,000 | " " |
| 1918 | 579,386,000 | " " |
| 1919 | 458,063,000 | " " |
| 1920 (Est.) | 542,000,000 | " " |

This is the commodity of greatest tonnage handled on our railroads and 75 per cent of it is produced and transported in the congested territory already described.

What has been said heretofore constitutes, in the opinion of the railroad man, the basis of a complete defence against the untrue charge so often made that "the railroads broke down" during the war. Perhaps nothing has contributed so much by way of ostensible support of this charge as the oft-repeated statements and advertisements of gross coal car shortages at the mines. There were coal car shortages, to be sure, and their effects were at times serious, but the blame therefor lies at no one door. Accepting the war as the primary cause, it is profitable to study the supplementary causes right down to date, with some consideration of how to eliminate them in the future.

### The War Demand and Its Results

Bear in mind that for some years before our war activity commenced the bituminous coal mining industry in this country was much overdeveloped. Financial conditions within the industry were by no means good and competition was exceedingly keen. Two rather lean years just before we hit our stride in war manufacturing did not, of course, better this situation. The market was chronically a buyer's one. The light demand and low production in these preceding years left no great stocks in consumers' hands upon which to play in undertaking our new industrial venture. A strong demand for coal came very quickly and by midsummer 1916 reached extraordinary proportions for that time. The war load was then well upon our railroads, and the demands for service required such continuous use of facilities as did not allow the desired opportunity for conditioning the same. Then began also the difficulties of the roads in obtaining additional equipment, due to the preëmption of industry first by more profitable

and later by what was deemed more essential work. But under the conditions as they then obtained the 1916 bituminous production went over 500,000,000 tons, even with a late start; and such coal car shortages as developed were as a rule peculiarly the result of particular situations incident to expansion of production on certain lines not favorably placed to handle the same.

Under these circumstances, with no control over the marketing of bituminous coal except that afforded by the law of supply and demand, the inevitable happened. By the beginning of 1917 we were in a period of rapidly mounting coal prices, while contemporaneously there came to Washington, in ever-increasing numbers, consumers whose very industrial life depended on regular and adequate coal supply and who found great difficulty in obtaining it. Statistics to show currently the true state of production, distribution, consumption, and stocks were utterly lacking, as indeed, is largely the case even today. There was, however, an undeniable shortage of cars at the mines and quite naturally the whole difficulty was attributed to this railroad disability.

Looking back at the production of 550,000,000 tons in 1917 and 580,000,000 in 1918, with stocks upwards of 25,000,000 tons at all times and reaching 63,000,000 tons on Armistice Day, it is easy to deduce that while the difficulty could have been cured by more transportation, permitting greater production, it might also have been cured largely and perhaps entirely by more economic distribution by the coal operators. That uneconomic distribution was at least a factor in the trouble was clearly shown by the nature of the demands made upon the railroads, and by the large stock piles of different consumers in different places. Admitting them to be extreme cases, it may be cited that one lot of Illinois coal, which does not ordinarily move east of Toledo and Detroit, went to the amount of 200 cars to Connecticut, while a coal car shortage on a southwestern railroad was found to result from shipments to the Twin Cities and beyond, whereas the normal market never went north of Omaha. Of the crosshauling of coal and the carriage of "coal to Newcastle" there was almost continuous evidence, although their exact extent could not be ascertained without the most thorough and complete policing and checking of the entire coal movement.

There was further waste of rail transportation, particularly in the bituminous coal movement to New England—one of the danger spots—because of the dislocation of ocean transportation. The Fuel Administrator for New England was not far wrong when he stated that removing coal-carrying vessels from coastwise service was equivalent to pulling up a four track railroad to his section. New England cannot be fueled all-rail any more than can our northwestern lake states. In-

stead of maximum ocean and minimum rail movement of bituminous coal to New England, we found ourselves by force of circumstances, in 1917 and early 1918, attempting the reverse. The rail gateways were incapable of handling what was attempted, and even so, the extraordinary use of such gateways for coal, of necessity, adversely affected other war movements. Furthermore, a car of bituminous coal moving to New England all-rail requires at least double the car-days necessary to handle the same tonnage to New England rail and ocean. To those circumstances must be largely attributed the failure to protect New England more adequately in the winter of 1917-18. And right here it may be noted that throughout this last year, New England, to escape foreign competition in the purchase of tidewater coal and ocean freight rates which greatly exceed rail rates, has leaned more and more on all-rail coal.

Nor was it possible to control distribution through the medium of our regulation of interstate commerce. The cardinal principle of that regulation is that carriers' rates, rules, regulations, and practices shall be just, reasonable, and not unduly discriminatory as between persons, places, and commodities. To be sure, the Interstate Commerce Commission early lent its support to the Council of National Defense and the Railroad War Board in their joint endeavors to cope with the situation. Always, however, there was before the carriers the statutory prohibition against undue discrimination, and the consequent possibilities of heavy suits for damages. There was, of course, much done by "strong arm" methods where the end justified such means, and late in the year 1917 when the National Coal Association came into being as the organization of the coal producers, considerable assistance was possible through that source, especially as price regulation had then become a government policy.

### Regulation Under War Legislation

The well-intentioned efforts of Secretary of the Interior Lane in the spring of 1917 to settle the price situation by coöperative action of the operators unfortunately came to nothing. It was not until August, 1917, with the effectiveness of the Lever Law and the Transportation Priority Act, that anything like order began to come out of the chaos. Even then, the Fuel Administration during the first several months of its existence was, as can be said in all fairness and without personal criticism, little more than an unwieldy machine; and what control it had of distribution resulted not so much from the exercise of its own powers and its control over the coal operators as from its ability to compel obedience to its requirements, by virtue of its ability through the Railroad War Board to effect some control of transportation.

The Transportation Priority Act, however, was immediately put to excellent service. One of the real danger spots in the 1917 situation had been the light movement over the Great Lakes for the protection of the territory beyond. This was immediately given attention by the President's Priority Commissioner and the situation was so well handled that during the trying winter of 1917-18 not a single case of coal shortage was recorded in the northwestern lake territory. As a second exercise of his powers, the Priority Commissioner again furnished great impetus in the right direction by authorizing certain preferences to coal in the use of so-called coal cars. This increased production simultaneously justified the consequential discrimination against the shippers of other commodities.

A suggestion early made to the Fuel Administration was that the movement of bituminous coal be zoned in such manner as to afford more economical distribution, both from the standpoint of war requirements and transportation possibilities. These efforts, although backed by the Council of National Defense and the Railroad War Board, were of no avail. Fortunately, the suggestion met with favor at the hands of the Railroad Administration shortly after it took hold. The immediate result was a prompt and careful study of the whole situation by a committee of both administrations on the basis of the original suggestions of the Council of National Defense and the Railroad War Board. The Committee recommended, and, effective at the beginning of the coal year April 1, 1918, there was promulgated a zoning scheme which stood the test of the remainder of the strict war period. This greatly increased the ability of the railroads to transport bituminous coal and facilitated proper distribution. Shortly afterward the Railroad Administration, exercising its extraordinary powers, made even more stringent rules than had previously existed, preferring coal in open top cars. These new conditions, coupled with the more effective organization and efforts of the Fuel Administration, were responsible for the 1918 figure of 580,000,000 tons production. It has frequently been said that had the armistice not intervened production for that year would have reached 600,000,000 tons. The fact is, however, that the saturation point had been reached in some sections before the armistice, and it may be doubted whether production would have been maintained after that date at anything like the high rates established before, even had hostilities continued.

### Coal Car Supply during the War Period

It will be profitable here to give consideration to some of the transportation features of the situation which faced the country in 1916, 1917, and 1918, and under which maximum, and in fact, reasonably

adequate, coal production was obtained for the country as a whole even though there was habitually throughout that period the cry of coal car shortage at the mines.

So far as the records of the coal loading railroads of this country permit such a comparison, it appears that on January 1, 1916, they were serving 3646 mines with an established rated capacity of 43,524 cars per day. Of these, 190 mines were undergoing what is known as development. On January 1, 1917, the total mines served by the railroads numbered 4916, with an established daily capacity of 55,158 cars; 358 of these mines were in the development stage. On January 1, 1918, the mines served numbered 6157, with a rated capacity of 59,968 cars daily; 840 of these mines being counted as developing. All mines included in this comparison are established tipple mines,—mines which have a permanent arrangement at the location of the mine itself for loading coal over a tipple into cars. So-called wagon or country bank mines, which are of a temporary nature but in a period of strong demand for coal frequently number two or three thousand, are not included. An outstanding feature of the comparison is that in 1917 and 1918, two years during which there was no regulation of prices and distribution until the last five months, the number of tipple mines increased almost 70 per cent, and their capacity in the neighborhood of 40 per cent. Expressed another way, the average capacity per mine per day on January 1, 1916, was about twelve cars, whereas, on January 1, 1918, it was less than ten cars. Although the established mines had during these two years been developing to even greater capacity, the multitude of new mines was enough to bring down the average capacity per mine. This in itself meant a waste of transportation.

For many years coal loading railroads have, in times of shortage, distributed the available cars to mines daily on the basis of their established rated capacity. One of the achievements of the Railroad Administration was the establishment of uniformity of practice on all roads in this respect. Common carriers are not equipped to handle all peak loads currently. This fact and the development of the bituminous mining industry far beyond maximum requirements of the country inevitably means a car shortage during such peak demands as have been made since 1916. Every increase in development of the industry, without corresponding increase in demand for product and railroad facilities, of necessity means that the available cars must be distributed to more mines in a lower ratio to established rated capacity. Expressed in another way, more mines must be served with the same number of cars in order to get from all mines in the aggregate the same tonnage of coal that could be produced by fewer mines served with more cars per mine. The point to be borne in mind is that even with a coal

car shortage, and with a pronounced coal car shortage, it is entirely possible to keep the country fully and adequately supplied with coal.

The weekly reports of the Geological Survey enlighten us as to this. It is to be regretted that the data furnished the Survey as the basis of its reports is only about 60 per cent complete, but relying as it must upon the good will and coöperation of the coal operators, and without any law back of it, the Survey has been able to report week by week a fairly accurate figure showing the percentage of full time worked and the percentage of full time lost at the bituminous mines, for various named causes. Applying to the tonnage produced weekly the percentage of full time worked gives an idea of the potential capacity of the mines, and this furnishes some rather startling indications of the overdevelopment of the industry. Judged by these reports the mines have a potential ability to produce bituminous coal to the amount of 18,500,000 tons weekly, or considerably over 900,000,000 tons per annum. One has merely to view this figure in the light of the maximum requirements of the country as indicated by our war experience and the assumption that our railroads can handle at least that, currently, to see that even a 20 to 30 per cent car shortage is inevitable at coal mines during a period of maximum demand for coal. That indeed has been our experience this past summer and autumn, even while production was exceeding current requirements week by week.

It is not, of course, to be contended that the mines would produce at the rate of 18,500,000 tons week by week even if the country would absorb the same, for manifestly the men could not continue maximum effort indefinitely. The point is that the failures of the carriers as shown by the reports of the coal operators are measured by a figure which reflects the maximum of productive effort in a greatly overdeveloped industry. It is significant that contemporaneously the demands for cars made upon the railroads by the same mines indicate a desire to load currently about 16,000,000 tons weekly. But even on this basis a car supply 25 per cent short would more than meet the country's needs for coal.

### The Post-Armistice Difficulties

In the period following the armistice we find first, as a consequence of the industrial slump after the termination of actual hostilities, that the demand for coal fell off very quickly. There was further a seeming disposition throughout the country to utilize stocks which the Geological Survey estimates at the tremendous total of 63,000,000 tons on Armistice Day. In consequence, production which had averaged 12,000,000 tons weekly for months before the armistice, fell at once to a ten million average, and in the first six months of 1918 to eight and

one quarter million. The railroads meanwhile were carrying the greatest car surplus ever recorded in our railroad history, the maximum figure being about 450,000 of all classes of cars daily, out of a total serviceable ownership of about 2,225,000.

By June, 1920, in some producing districts and quite generally by late July, the demand for coal was again in excess of the ability of the railroads to furnish transportation therefor, and another car shortage period began. This time the fundamental causes were different from those in 1916-18, but the situation was certainly as acute. Surplus stocks had been largely consumed. The mines had been running on short time so long that there was even greater than ordinary eagerness on the part of operators and miners to get back to maximum production. The railroads had been through three war years during most of which the wheels had been all but run off their locomotives and freight cars in continuous service. Usual retirements of freight equipment and replacement by new units had been impossible for one or another war reason, while demands for empty coal cars exceeded even those of the war period. This task before the roads was rendered even more difficult in August, 1919, when employees in the railroad shop crafts began to strike. These strikes continued throughout that month and greatly militated against good service.

### Bituminous Miners' Strike, November-December, 1919

By September 1 railroad conditions were somewhat more stable, but by that time the bituminous coal miners' strike was already in sight. Plans were laid by the Railroad Administration for immediate improvement in the service for coal. A minimum production of 11,000,000 tons weekly was the mark set. It was attained in the first week of September, and consistently exceeded thereafter down to the date the strike broke, November 1, 1919. During the last two weeks of October preferential transportation for coal was accorded everywhere, even to the exclusion of other commodities, and production broke all previous records.

The advent of the strike cast additional burdens on the railroads, although the demand for coal carrying equipment immediately fell off over 60 per cent. The Fuel Administration, recalled to activity and having neither organization nor funds, proceeded to exercise its principal function, that of distribution, through the medium of the Director General of Railroads. The program for the country's protection involved the holding on wheels of some 300,000 carloads of bituminous coal in the hands of the carriers on the morning of November 1, and the rationing of the same according as needs developed. This was an exact reversal of the railroads' usual function of transportation to destina-

tion and delivery to consignee as rapidly as possible. It very effectively hindered transportation generally.

The work of the Director General in his agency for the Fuel Administration has been much criticized. To be sure, it was by no means perfect, but undertaken at a moment's notice, and handled of necessity by a nation-wide organization created by wire overnight, it hardly could be. Speaking as a member of the Director General's Central Coal Committee, the writer ventures the statement that the criticisms are based mostly if not entirely upon hindsight, and volunteers the information that the critics of history presented no concrete suggestions for improvement while the emergency was on. Even the accredited representatives of the bituminous coal producers in Washington throughout the strike were unable from day to day to furnish any dependable information with respect to the possibility of resumption of work. The same representatives who on one day would insist that settlement of the strike was in sight and that the coal on wheels could be safely released, would on the following day congratulate the Central Coal Committee for not having followed the advice previously given. Under such circumstances there was but one sound policy in the face of the rapidly declining coal reserves, as evidenced by the coal under load on wheels. That was to "play safe," and that policy was consistently followed until there was reasonable certainty that work would shortly be resumed.

Production during the strike was largely obtained in the northern Appalachian fields. Available reserves were most rapidly absorbed in Ohio and the states west to the Rocky Mountains. For their protection thousands of cars of eastern coal were moved west extraordinary distances and over extraordinary routes. Most of this eastern coal was higher priced than the coal customarily sold in that western section. The consequence was that with the cessation of the strike in sight and the possibility of cheaper production at hand, those for whose protection this coal had been moved west refused to accept it, and thousands of eastern cars were tied up under load in the west for weeks. Eventually the coal was parceled out to the railroads, the steel companies, and other large consumers who were able to utilize it.

## The Situation in 1920

Although the miners' strike was settled in mid-December, only fair production materialized in the winter months of January, February, and March. It was not sufficient to accomplish more than current protection for the country, and gave no opportunity to build up the greatly depleted stocks.

Federal control of railroads terminated February 29, 1920, and pri-

vate operation in March showed progress in improved bituminous production. But in the first week of April began the outlaw strikes of the switchmen. Again production dropped to exceedingly low figures, and low marks continued for many weeks. Net ownership of coal cars by our railroads had not increased during federal control and the "bad orders" were excessive. The small stocks, estimated by the Survey as 24,000,000 tons March 1, and the extraordinary dislocation of coal cars throughout the country, a result of the heavy movement of eastern cars west during the strike, made matters worse. Car shortage figures at the mines leaped to extraordinary heights. It was early appreciated in the railroad world that a serious danger threatened the country and called for extraordinary effort to increase the facilities available for the coal transportation.

Profiting by our experience during the war, the Congress in enacting the Transportation Act, 1920, made provision that enabled the Interstate Commerce Commission to assist materially in meeting the situation. Under this legislation the Commission, whenever in its opinion an emergency exists, may authorize some departure from the cardinal principles of just, reasonable, and not unduly discriminatory practices in our scheme of transportation. Immediately upon the representation by the railroads that such an emergency as the statute contemplated did in fact exist, the Commission took active and energetic steps calculated to remedy the situation. First was an order relieving the railroads from the necessity of following shipper's routing, and simultaneously came a series of car relocation orders to bring back from the west to the coal mining territory of the east thousands of empty coal cars. Subsequently, for the further relief of the coal situation, the Commission specifically authorized preferential utilization of coal cars for coal loading. Additional emergency service orders resulted in Commission specifically authorized preferential utilization of coal moving to Lake Erie and tidewater ports for transshipment by vessel beyond, thereby avoiding car and vessel detention. Still further, in order to assure the territory beyond the Great Lakes and the people of New England of adequate coal supplies for the coming winter, specific preferences were set up for their benefit.

All these measures did, to be sure, discriminate to a certain extent against other industry, but the discrimination was only what Congress contemplated in authorizing the Commission to take action of this sort to cope with emergencies. Much as it is to be regretted that other industry had to suffer, there is satisfaction in the thought that the programs laid down have all been fully completed, and there is every indication that the coal situation in the country as a whole is in a safe condition for this winter.

In the rather harsh experience of the past four years there are these signs for the future:

1. The bituminous coal mining industry is developed far beyond the present or immediate future demands of our domestic and foreign trade in bituminous coal.

2. Our railroad facilities are probably adequate today to handle our necessary annual bituminous output produced with fair uniformity of rate throughout the year, and will certainly be adequate when post-war rehabilitation of the properties is completed.

3. Our railroad facilities are not, and without great waste of investment never can be, adequate to handle currently our necessary bituminous coal production when obtained by weekly peaks of 13,000,000 tons and valleys of 7,500,000 tons in a twelve month period, as has been the case these past two years.

4. While the powers of the Interstate Commerce Commission are sufficient to force transportation for such extremes of production, the exercise of such powers necessarily involves discrimination against other traffic and should be avoided if at all possible.

5. While our present railroad regulation can force production, it can control distribution but slightly, and prices not at all.

6. Extreme variations in rates of production not only unduly burden the transportation machine, but invite further overdevelopment of mining, with the consequence of greater irregularity in miners' working time.

7. So long as regulatory power exists to force coal production at the expense of other industry, similar power should exist to compel proper distribution of such production, should necessity therefore arise.

8. Provision should be made, by additional legislation if necessary, for the securing and compilation by proper governmental authority of current and complete statistics of production, distribution, consumption, and stocks, of bituminous coal.

To conclude, let it be kept in mind that production, transportation, distribution, and consumption, are the four big factors in the bituminous coal industry, and should be reasonably well balanced. Of course, such disturbances as war and nation-wide strikes constitute emergencies which require corresponding treatment. But under ordinary conditions proper coördination of these four big factors is possible and the result should be better conditions of mining and railroading, lower costs of production and transportation, and better prices and distribution to the consumer. These are the ends toward which we should aim.

# COMMENTS OF AN ORE ENGINEER

By Arthur J. Mason
*Chicago, Illinois*

Just before the war circumstances took me for the most of a year into contact with coal mines and mining. I had passed a good many years in the steel business participating in the reform which changed the manipulation of the raw material used in steel-making from hand work to machine. I had seen the cost of a typical unit act, such as unloading a ton of iron ore from ship, drop from 25 cents a ton to 5 cents or less. I had watched the slow sobering of the personnel in a plant as the introduction of machines took from the shoulders of the sons of men excessive physical work—so excessive as each night to leave a man in such a state that relaxation and entertainment could only come to him through the use of alcohol. I had watched the process of picking out and promoting the brighter spirits in the crews to jobs calling for greater skill and thought. I had watched the stimulating and uplifting effect on groups of men as they participated in bringing about a plan to do more and better work, each one, each day.

Through such observation I have come to a firm and definite conclusion of the value of labor-saving devices to masses of hardworking men in elementary work, even though the first effect seems to be to run them out of a job. Part of that conviction is the belief that there is no other procedure to raise the status of such groups but in labor-saving devices. Further, that the enormous economic advantages are not more important than the moral effects, which contemporaneously and naturally flow from the use of such devices. Only through them can we lighten, sweeten, and render more profitable the lives of the millions of men who now work out of sight in coal mines.

The poor Asiatic actually regards jealously a beast of burden as his competitor and rival. We will not go very far until we remove from down in the coal mine the obsession that steam and electric beasts of burden are competitors and rivals of men's bodies—the Asiatic view—and substitute the belief that these agencies are friends and humble aids just as much as domestic animals.

We are met to study over the economics of the coal harvest. The viewpoint I am to take is that of an outsider. Not always does the onlooker see most of the game, but his view is bound to vary either from that of the coal operator, who is too close to the game and too interested in its habits, or that of the economist and statistician, whose mind dwells on the refinement of the existing order of things as set forth in recorded facts.

The ore man first realizes the radical difference surrounding the art

of ore handling as a stage of steel making from its kin, the art of coal mining. The steel business is dramatic; it has been very profitable; great fortunes, remarkable men, are associated with it in the public mind. Vast numbers of fine technically trained young men seek it. Steel plants are adjacent to large cities; the personnel participates in the life of such places. It employs all the arts, and its work is easily translated into readable journalism.

On the other hand, coal getting is essentially provincial. It is a dirty occupation; out of sight. It attracts a large number of simple-minded, vigorous men, largely of foreign birth, who from their isolated lives have small chance for what we call Americanization. This is not an unfair statement, and explains the fact that iron ore handling has gone so far—has already achieved the reform in procedure which coal mining awaits.

Low grade copper ore manipulation has already benefited by utilizing the devices and knowledge of the iron processes.

The four great opportunities in coal production and use appearing to me are:

1. Mechanical loading of the coal after the face is shot in the mine.
2. The establishment of great storage piles at points of large consumption.
3. A reform in use and distribution of coal at large cities.
4. The classification of coal from its chemical and physical characteristics in the manner that wheat or iron ore is now classified.

I will deal with these four ideas in order.

1. *Mechanical loading of the coal in the mine.* The outsider with technical training and experience is astounded when he first comprehends the fact that nearly 700,000,000 tons of coal each year is shoveled by hand into mine cars in this country alone. It is to him as though we were to go back to spading our land in agriculture instead of plowing it. Let me try to visualize this work for you. The coal we burn in the months of January and February would fill up the whole Panama Canal. Who would contemplate that great work as a possibility with hand tools? A million men in the United States, another million in the United Kingdom, pass their working lives down in the mine or near the pit mouth in the work of transferring coal from its long resting place into railroad cars. Think of the crowds of New York, or Chicago, or Philadelphia, then remember that one man in 25 works in a coal mine, and actually one man in 12 in Great Britain. "Out of sight, out of mind," we say, and the terrible truth goes on and on.

Were it not for the peculiar psychology underground, were it not for the fact that this mining is dirty, and its details unknown to society, this matter would have been disposed of long ago. Give access

to the mechanical ability of the nation, spread news of the need and opportunity, and the same kind of wit which dealt with the harvest will speedily and easily deal with the coal. I do not regard this problem as mechanical so much as psychological. In view of what we now do in other forms of excavation, I do not regard the job as especially difficult.

My observation for the past forty years leads to the belief that intellectual and economic appeals, however logical, sound, and fortified, make little headway unless accompanied by some moral and sentimental appeal. Can one conceive a proposal more splendid than one to bring to the surface and the light of day 700,000 men to do some finer and better work, and to bring upward with them their families and dependents? One cannot escape the conclusion that mechanical loading of coal is the principal change necessary to do this.

The preponderance of our coal is mined from veins in which a man may stand comfortably erect. Into the face of the vein of coal auger holes are bored to contain explosives to loosen the coal, and a slot is cut into the bottom of the vein by the so-called mining machines. The prices the miner receives, so much referred to in our daily papers, require him to bore the auger holes, furnish the explosives, and pay for the cost of undercutting the coal by machine. After the explosion he must shovel the coal into cars which are to convey it to the surface. The cost of providing for the explosion, plus the cost of undercutting, amounts to about 15 cents. If the total paid miners be, as it is in Illinois, $1.04, then for the job of shoveling a ton of coal into a car the miner and his "buddie" get not less than 89 cents.

This is the particular act the wastefulness of which I would now emphasize. If, in agriculture, the land were prepared by such a primitive process, then either wheat would be worth $15 a bushel or agricultural labor would be paid at a rate of not more than $100 a year, a sum much greater than is now paid in China, where such primitive methods do prevail in agriculture.

The truth is that the mechanical genius of the nation has passed by this great opportunity unaware. Is it just to the rest of us that this particular calling should remain so far behind? When one recalls the wonderful things done by labor-saving devices in the mighty aggregate effort of this nation each year, no sensible, reasonably qualified mind can doubt but that this work of shoveling can and will be done for a fifth of its present cost by machine, and that, at the same time, everybody's job will be lighter, pleasanter, and more profitable, precisely as has been the case with the changes in handling iron ore.

Furthermore, the work of boring the auger holes and loading them with explosives will be better done by experts who do nothing else, just as the undercutting has already been relegated to experts in whose hands the undercutting machines now do this work far, far cheaper

and less wastefully than the old-fashioned miner, wielding a short sharp pick, could ever do it.

Let me state here that when you hear of machine mining of coal, it only refers to coal under which the slot has been made by machine. The expression "machine mined" is misleading. It is true that machines are available to do the major operation, but so far they don't do 1/10 of 1 per cent of the loading, and their extensive use is always threatened by the natural mistrust engendered by an old-world mental attitude prevailing in the rooms of our coal mines.

I am about to state a most glorious fact, not much known, yet which often cheers the little groups of choice spirits in each art who have brought about the wonderful labor-saving devices at the bottom of our national success.

That fact is that whenever we start up some bold and economical change in our work, we almost invariably find collateral, incidental and unsuspected benefits as great as those we first had in mind. I will name a typical one out of a mass.

When we undertook to handle iron ore mechanically, the great comprehensive tools brought forth enabled the ore to be piled in such masses that *we abolished winter*. Two days ago, some of us with our children and grandchildren danced round the Christmas tree, an age-long practice. Twenty years ago at such a moment hundreds, nay thousands, of men were out in the night, maybe 20° below zero, with a gale blowing, each man with his barrow or buggy, his pick and shovel, attacking frozen ore piles from the outside. You all have imagination enough to fill in the details of the situation. Today one man does the work of hundreds. He sits down, he wears gloves, he has abundant light. He keeps the temperature of his trolley cab as comfortable as in your library. He uses the frozen crust of the pile as a protecting wall, so that like potatoes in a cellar, the ore remains in a good working condition, not frozen.

I will pass to contemplation of the collateral benefits necessarily flowing out of a system of complete mechanical mining of coal.

Roughly speaking, one may justly say that the operating cost of putting a ton of coal on a railroad car is twice the sum paid the miner. The half not paid him forms the cost of creating and maintaining in the mine, local transportation, ventilation, drainage, light, search and safety, management, lifting coal to the surface, and general maintenance. Now this whole group of costs varies directly with the underground area from which the coal is gathered. For my present purpose it is a fair assumption to state that for each 1000 tons brought up 100 acres below is provided with a labyrinth of entries, rooms, tracks, switches, ventilation devices, so that in a big mine, raising 5000 tons,

almost a section or mile square is so organized—a city underground, which utterly bewilders the novice on first acquaintance.

This area largely arises from the pseudo-ownership which every miner acquires of his room or rooms, technically known as his *place.* This place he inhabits with his "buddie" and owns for perhaps a year. An unwritten charter has for a century given him rights which are sacred. He works, or does not work, like the rest of us, according to our health, our wife's health, our national holidays, our interest in baseball, our funerals, our marriages, our quarrels. The problem of supplying empties or taking away loads from the rooms or places, thus becomes a sort of game of chess, almost impossible of proper organization. From this the miner himself suffers most of all.

It is trite to say that the work at any point in a coal mine, as in any tunnel, will proceed with the frequency with which a face is shot. I find that the room faces are shot in Southern Illinois on an average about once in four days. If these faces were shot every day, it must surely follow that the area kept alive with the agencies I have mentioned will be cut down correspondingly. That is to say, two and one-half acres become the equal of ten acres, and the cost of mining over what is paid the so-called miner will fall in much that measure.

Machine loading will necessarily abolish the institution of places in coal mining. A group of six men with loading machine and gathering motor should average 100 tons of coal per hour loaded in mine cars and delivered to the general transportation system of the mine. This crew will proceed from room to room, with much the same sort of order that we follow in other work of a kindred character above ground. Machine loading will enormously concentrate the work. Inasmuch as there will always be a gathering locomotive in attendance, there will be hardly any limitation to the size of mine cars. They should rise to ten or even fifteen tons, instead of two or three or four as a present average.

Throughout the procedure everyone will think and act in larger units, and this is no small matter. Ten years ago in an earnest inquiry I could find no reason, nor could any of my expert friends on the ground find any, for the fact that coal in London, 250 miles by water route from two great coal fields, was $3.70 per ton f.o.b. cars, while coal in Chicago, 300 miles by rail, plus a terrible winter, was $2.30 f.o.b. cars, wages in Illinois being almost three times wages in England. No other reason, I say, but thinking and acting in our case in larger units. The Englishman did his work in what I can find no other fitting expression for but a piddling away—his mine cars like baby carriages, his railroad cars hardly bigger than our delivery trucks. No one could pretend that English miners are inferior to our miners as miners. When they come here they hold their own. Yet they get but 250 tons per year against

our 600 tons. Our surprise at this is only heightened when we find that the miner of the Steel Corporation doubles this figure again, and gets twice as much coal as the miner outside the Steel Corporation. There seems no limit to what a man can do when properly fortified by organization and tools.

Having prognosticated certain things twenty years ago with success, I will go into the game again and prophesy that coal production cost at the pit mouth will fall two or three-fold within the coming ten to twenty years, and yield more profit to all concerned than ever before, excepting of course our last three years' spree.

2. *The establishment of storage piles at points of large consumption.* The greatest economical waste in the coal situation is the waste of manhood, waste both physical and intellectual. Most of our miners come from a European environment, cruelly hard, and lacking in opportunity. Life in the mine and a home in the vicinity do not afford what all good men most desire, an opportunity for prompt Americanization. Being isolated groups, often nationally coherent, forces are very strong to preserve the old world mentality and habits. This situation is aggravated by the fact that coal mining has been allowed to become a seasonal industry, due to our severe climate and its caprices, and here appears my *second* great opportunity.

From the beginning our ore industry stopped each year with the freezing of the Great Lakes. We were forced to introduce storage systems, and out of them has developed a most astonishing group of effective mechanisms, which are ready to the hand of those manipulating coal.

The intermittent character of bituminous coal mining is very demoralizing. I wonder how many men in this room would retain their equanimity did they live under circumstances wherein day after day, week after week, year after year, they could not forecast from day to day when they would work, how much they could work, bread and butter requiring that they *must* work. Our soft coal mines probably have not averaged 200 days' work in the year. The difficulty has always been—what 200 days? No one could tell a week ahead.

The obvious remedy for this is the storage pile at centers of consumption. It is interesting to know that this system has long been in existence in dealing with the coal for our Northwest. Many millions of tons are carried annually by the returning ore vessels to Duluth and other points, and from there distributed as the demand arises. This coal has been carried a thousand miles for the past twenty years for something between 30 and 50 cents a ton—an economical achievement without parallel.

Northwest practice has fairly abolished the bugbears of deterioration

and of spontaneous combustion, save in very high sulphur coal. The devices are available now in the car dump and the great storage bridge to put soft coal into stock, and take it out of stock, for something like a total of 10 or 15 cents a ton.

The creation of a system of storage and equipment will give continuity to coal mining, but its collateral advantages will be even greater. No longer will railroad cars choke the great yards at division points, demoralizing prices and stopping traffic. The railroad will run its regular trains throughout the year to move the coal. No longer will the coal supply in our cities have its chills and fever as the weather varies. The severe winter storm not only suddenly causes a great demand for coal, it also brings conditions under which even a normal demand cannot be met.

It is an open secret that 4/10 cents tariff per ton mile never was, or will be, a profitable figure for railroad transportation in our severe winter. There is every prospect that it will be profitable with a steady volume of business during the fine weather part of the year. Moreover, a good deal of this ultra coal movement is contemporaneous with the transfer of the harvest. It is altogether desirable that these two maximum streams of transportation should be separated in season if we can do it.

3. *A reform in the use and distribution of coal in cities.* We use about the same amount of coal per capita as England, say six tons each per annum. In our case a large modicum is used to meet a severe climate, that is, to keep our bodies warm and commodities from injury; in short to promote comfort. All of this fuel is very wastefully used. It is a safe statement to say it is burnt at a rate corresponding to six or more pounds per horsepower hour, whereas it might be burnt in large installations at two pounds per horsepower hour to effect the same result. This fuel is distributed to thousands and thousands of destinations by wheel vehicles along the streets, wearing out pavements and interfering with the traffic. In the same manner the ashes and partly burnt coal, amounting to one eighth in weight, probably one fourth in volume, are gathered and finally disposed of. Needed space in buildings is occupied; the "bete noir" of housekeepers, the furnace man and the ash man, all take their place in this chain of waste and annoyance.

The primary saving which would ensue should municipalities undertake to furnish heat to the citizens, as they now do water, by means of great central stations, would reach a sum measurably equal to the present total taxation in those cities.

The secondary saving, due to the absence of smoke, the prolonged life of carpets, wall paper, clothing, furniture, curtains, laundrying,

paint and many other things, would, if justly stated, reach such a mighty sum as even to attract the notice and respect of one of our industrial boards in Washington during the late war. A man in a city should no more be allowed to light a soft coal fire in his house than he is allowed to maintain a private water supply in his back yard in the form of a shallow well.

4. *The classification of coal from its physical and chemical characteristics.* This major reform is suggested by the steel business. Twenty-five years ago there were perhaps 100 different varieties of iron ore on the Messabe range, each ore bearing the name of the mine—fondly supposed by the owner to have special merits. The Steel Corporation classified all this ore into five grades or groups. This act has enormously simplified the movement of fifty million tons. In the same way, our wheat loses its identity the moment it appears at a railroad. It then becomes merely so many bushels of No. 1 Red or some other grade. It would be impossible to move our harvest if the identity of each parcel of grain were preserved.

The benefits which would accrue from a systematization of this character in coal would be very great, and ramify in many directions. Let me pick out one.

The bulk of our coal in cities is delivered to team tracks and shoveled from the cars into wagons or trucks. I know of land in Chicago worth a half million dollars an acre devoted to such a purpose—a most wasteful use of car time, team time, and land time. All this coal should at once be classified by disinterested officials, be mechanically unloaded by car dumps, elevated into great structures like grain elevators, and loaded by gravity into wheeled vehicles for distribution. The cost, by such a plan, would be an infinitively small part of the present cost, a vast amount of tonnage would be handled on a small area, and the railroad equipment released in a few hours instead of days.

Twenty-five years ago an empty car arriving at a Lake Erie port was in port some four days before it departed as a weighed load for Pittsburgh. Today it is not a tenth of that time at good harbors. Perhaps you will visualize the saving of space when I state that a metropolitan elevator will store the grain contained in a train of railroad cars six miles long.

The classification of coal according to its genuine contents will protect the public in the same manner that statutes of our states protect farmers regarding fertilizers, throwing out of the game much bunk, clarifying the business, and benefiting both producer and ultimate consumer. Today we are able on a dock front 600 feet long to do a volume of business in iron ore of over three million tons. Twenty-five years ago it took a frontage of a mile to handle half as much. The treat-

ment of coal in cities is susceptible of improvement of the same order.

I have deliberately kept to the last two advantages which it seems must inevitably arise in coal mining when mechanical loading of coal becomes general, both due to the celerity with which a given area will be attacked and the coal robbed.

The first one is its effect on safety in coal mining. The public mind is, from time to time, aroused over the story of some great calamity. It sees pictures in the newspapers showing hundreds of women, with shawls over their heads, waiting for the bodies of their beloved to come to the surface. Not at such times, statistics show us, do the fatalities arise. The preponderance of fatal accidents come from pieces of roof falling, not extensive, a few hundred pounds at a time. Now every engineer knows that caving, whether in open cut or underground, is but a question of time—ground which is quite safe for a week is utterly unsafe in a month. It is plain to me that nearly all fatalities from local roof falling will disappear with complete machine mining. It is not uncommon to leave coal in the roof merely to strengthen it. I know of mines in Illinois where as much as 20 per cent of the coal is not taken out for this reason: to-wit, the roof is not safe for a year without it; but if the same roof was called on to stand only a month, it generally would be safe without the reinforcement of two feet of coal left in place.

The second great collateral advantage I confidently predict as a consequence of rapid machine loading will be that almost all our bituminous coals may then be taken out by the long wall system, thus winning all the coal, not the dubious 70 per cent we now flatter ourselves with. If this be so, it means a beneficent revolution in all the stages of coal mining. For one thing, the long wall will abolish the dangerous and expensive robbing of pillars in all systems of stall and pillar mining, under which the most of our coal is won.

I find myself so often referring in the steel business to twenty-five years ago. This was the period when the metallurgical side of the business had so far progressed that the technical groups turned their minds to the perfection of mechanical procedure. It is only just to say that the formation of the Steel Corporation, bringing together large numbers of highly-trained young men in friendly relation, who stimulated, aided, yet competed with each other, has perhaps been the largest factor in bringing about this burst of enthusiastic effort with its grand results to all of us.

The coal business is ripe for changes along the lines indicated, that is, of coöperative management and friendly spirit. Perhaps, too, the moment is opportune. Sadly we must admit we seem to be at the portals of a period of depression. Is this not the very moment to estab-

lish in our cities, on our railroads, and in our mines the agencies for production to adequately meet the next wave of prosperity and demand? Indeed, will not such a program accelerate the coming of that happy time?

I apologize for being so technical before this audience. For the reasons I have attempted to give, an appeal must be made to the enlightened public, for the art of coal mining is out of sight and has not the advantage of all the other arts of being in the light of day and within the purview of the man who runs and reads. Public opinion must be roused to the splendid job of bringing to the surface about three-quarters of a million vigorous men. I repeat, I will not make much progress by a merely intellectual appeal. The appeal must have its moral, sentimental side. It is not an extravagant statement to say that the environment and the life in the mine, under which this million men work, is less agreeable than the environment we provide in our prisons for criminals. No fair man can go into a mine without warming to the good, vigorous fellows he rubs against. Perhaps I am oversensitive. Perhaps I feel, stronger than other men, a hatred of seeing human fingers and human muscle doing things that an inanimate machine can do better.

Only since writing this paper have I come to a realization of proportions in total tonnage movement of our railroads. I offer a visible exhibit of that proportion:

| | | |
|---|---|---|
| Coal ..... | 650 million tons | |
| Wheat .... | 30 million tons | |
| Corn ..... | 45 million tons | An equal amount remains on the farms. |
| Oats ..... | 9 million tons | |
| Hay ..... | 50 million tons | |
| Iron Ore... | 70 million tons | |
| Steel ..... | 40 million tons | |
| Lumber ... | 60 million tons | |

The agricultural harvest which our railroads handle is therefore but one fifth the weight of the coal they move. Adding the ore, steel, and lumber, it appears that the coal is still more than double in weight that of all the other primary products mentioned.

I am now going to make a statement sure to evoke a storm of dissent; nevertheless I make it with confidence.

My claim is that the time-honored pit-mouth cost of a ton of bituminous coal, which has ranged for many years from $1.10 to $1.40, will by reason of mechanical loading in the mine fall to a total of 50 cents per ton, f.o.b. cars at the pit mouth. Now a horsepower requires ten tons of coal—and the interest cost of steam installation, about $5.00 per year. These two items constitute 80 per cent of the cost of a horsepower year.

What do these figures mean? Simply this, that with the premise stated, a steam horsepower year cost generated at the mine falls to the cost at Niagara Falls, which has the advantage of high hydraulic head and favorable environment, and much below that at Keokuk, with low hydraulic head and less favorable environment for the sale of power.

What next follows? Three things plainly:

1. It will then be ridiculous to haul coal by railroad cars at 50 miles a day when we can send its equivalent 180,000 miles a second by high tension current to points of consumption.

2. Our railroads might be relieved in this way of say 300 million tons of low priced haul.

3. Our railroads will find electric traction with generating station at mine cheaper and better than the steam locomotive.

Is it not pertinent to inquire whether the large expansion of our railroads generally supposed to be necessary cannot largely be met by canceling this vast unnecessary coal tonnage movement? Surely anyone knows that coal transportation, with its heavy wheel loads, is the principal cause of wear and tear on the permanent way of our railroads.

A distinguished man a few years ago affronted many good people by the declaration that our railroads might by economy save a million dollars a day. Those same good people would now view the allegation as one coming from a piker in its moderation.

How strong is the force of habit. What sense is there in hauling millions of tons of hard coal 700 miles to Chicago, or 1000 miles to Kansas City, when the local fuel merely by a shift in well known procedure will do as well? We contemplate with pain the coming or perhaps already arrived depression—with its involved suffering. Will a time ever come, when by an intellectual process, drawing from the stock of knowledge you men have collected and digested, we can avert a depression, by applying the proper remedy? Must we go on forever in the dark, learning only as the burnt child avoids the fire? Shall we go on forever suffering want, just because we have too much of what we want?

## THE BITUMINOUS COAL INDUSTRY—DISCUSSION

ARTHUR E. SUFFERN.—Most of the facts brought out by the various papers on this subject are so *very* true that we are tempted to refuse to see their full implications. The public has been discontented with the situation in the coal industry for some time. Even though it is recognized that there is a public problem in relation to the coal industry, it will be difficult to find instrumentalities formidable and effective enough to cope with it.

One can hardly fail to be impressed with the analysis of the elements of the problem which the papers on this subject have presented. Moreover, some practical measures have been pointed out for dealing with technical improvements, operation, transportation, storage, distribution, standardiza-

tion of product, and the improvement of the conditions of human life in the industry. But they all seem to be dependent for effectiveness upon the way they are fitted into some comprehensive plan for dealing with the industry as a whole.

The most important aspect of the problem would seem to be what has been called the "deflation of mining capacity." Improvements in technical processes of production, greater conservation of resources, and the more adequate use of transportation facilities all are largely dependent upon careful adjustment of mining capacity to meet the needs of the nation. Overinvestment in times of prosperity, seasonal fluctuation in demand, and glutted markets have formed a sequence which has been the greatest retarding factor in the development of a more efficient mining process and in the relief from congestion of transportation.

Suppose we assume that we wish not merely to conserve our resources but that we desire to get higher returns from what we do use. Suppose we assume that we wish to give investors a fair return upon capital, the laborers a compensation permitting decent and progressive American citizenship, and the consumers the best quality of coal possible at the lowest possible expense. Suppose we make no attempt to go as far as the best production engineers in many countries say we should go in dealing with the industry according to the best known science at our command.

In an attempt to accomplish deflation of mining capacity with these assumptions present, the formation of an adequate plan must rest upon the selection of effective soverign powers under our present constitutional arrangements. We must also have a basis of regulation which would be broad and effective enough to enable us to obtain real conservation, to enforce the exploitation of the thick veins or the thin veins and the best grades or low grades of coal to suit our needs, to require the recovery of the maximum percentage of coal at the minimum expense, to control technical processes and the use of equipment, to standardize and enforce accounting, to regulate distribution, to standardize coal according to quality, to deal with wages and conditions of labor, and to provide for increasingly greater coöperation between managers and workers.

These factors all demand immediate consideration in connection with production. Of course it is possible only in theory to separate production from distribution and consumption for purposes of special study of particular aspects of the problems involved. It would seem that we already have adequate powers of regulation of transportation to coördinate it with a scheme of coal control. Moreover, the control over transportation might easily be elaborated in a way to practically compel communities to provide storage and receive their allotments at the proper time. To what extent communities could be induced to reform their methods of use and distribution of coal would probably depend, at first, more upon the demonstration of efficiency and saving in cities which tried it than upon the possibilities of harmonizing sovereign powers in states and localities or the extension of federal regulation.

One thing is certain: we shall make a choice in connection with this problem whether we wish to or not. Either we shall seek adequate powers and procedure for regulation, or we shall permit the waste and concentration of power which has obtained in the anthracite field. The latter alternative is apt to occasion a much more prolonged period of waste and less effective

control in the bituminous field than has resulted in the anthracite industry. Moreover, we shall ultimately face conditions in both the anthracite and bituminous fields which will compel a policy of regulation. If this is true, all parties concerned, owners, workers, and consumers, cannot do better than agree upon and work for a plan founded upon adequate sovereign powers, enforced through effective organization.

From the best information I can get from those versed in constitutional law, such a basis of power might be obtained through a law extending the federal powers to control businesses under licenses. The power to control through licenses might be supplemented by the power to control interstate commerce, by the power of eminent domain, by the taxing power, and even by the war powers. As a last resort a basis of power might be obtained through a federal amendment.

It should be entirely reasonable to suggest that nations depending increasingly upon industries for growth and progress, and that consumers in cities depending completely upon coal for warmth and health, will ultimately demand an effective basis of control to meet these needs regardless of the obstacles that may now seem to hinder its attainment.

PERCY TETLOW.—It is a privilege I greatly appreciate to make a statement before the American Economic Association, whose members long since have abandoned the conception of economics which caused it to be called the dismal science. According to the old doctrine wages could never rise above the level necessary to provide enough workers to supply the needs of humanity, as any increase above that minimum would cause the workers to "breed" more rapidly and to multiply until the supply of labor would be so plentiful that only a subsistence wage would be available for each worker. That was indeed a dismal doctrine; aye, a brutal doctrine. None of you, gentlemen, adheres to it. You know that every industry in order to justify its support by the consuming public must provide for the workers engaged in it, not a subsistence minimum that would enable them to live like beasts or savages, but a living wage sufficient to support them and their families in accordance with the American standard of living, which comprises not only food, clothes, and shelter, but also enough to provide a decent education for the children, to afford opportunity for self-betterment, amusement, and recreation, and to make it possible for the worker and his wife to take part in the religious and civic life of the community. With this conception of a living wage you are, I am certain, all in accord as economists and as citizens of a democracy; and it is for this idea, universally admitted in theory and sanctioned by the highest religious and political authority, but grossly disregarded by many of the managers of our industries, that the United Mine Workers contend.

We did not receive a living wage before the war. At a time when $800 a year was considered by the best students of the subject as the minimum necessary to maintain a decent existence, the majority of bituminous coal miners were earning only between $400 and $600 a year, and their average earnings were only $451. Then came the war and the enormous rise in living costs. The mine workers patriotically agreed to stick to their jobs and to ask for no improvement in their economic conditions so long as the struggle lasted. But the dollars in their pay envelopes were continually shrinking in purchasing power, and the miners in self-preservation were

obliged to request on several occasions to have their money wages increased in order to keep their real wages from dropping. They had to run very fast to remain where they were. The requests were granted on some occasions and refused on others. Out of the last refusal grew the strike of 1919 and the appointment of the Bituminous Coal Commission. This Commission considered our case and granted us an increase about twice as large as that proposed by the Fuel Administrator, Dr. Garfield, and rejected by the miners. The Commission's award gave us a wage approximating in purchasing power our prewar earnings. But it granted us no improvement over our prewar economic condition.

The war is over, gentlemen, and this is the time to make it clear that we are no longer wedded to the index number. We were willing to abide by its decrees so long as a national emergency made all thought of personal gain unpatriotic. We stuck to this resolution, although our employers did not scruple to make large profits out of the nation's need and our patriotic sacrifices. But we now declare our independence of the index number based on 1913 as 100 per cent Americanism. We claim that our condition in 1913 was not American, not acceptable to a self-respecting community of workers. We are instead willing to accept the decision of another figure emanating from the same source as the index number, based not on any year as an ideal, but on the amount of commodities and services required by a family in order to maintain a standard of health and decency. The United States Bureau of Labor Statistics has worked out such a budget of physical quantities, and its cost in our present day dollars is roughly $2240 a year. Those of you who have not seen the budget are respectfully referred to it. It is not extravagant; it is very economical and conservative, but it does grant the essentials of a decent life, without resorting to the keeping of boarders and lodgers, and thus sacrificing the privacy of our homes and the strength of our women, or to child labor, and thus ruining the future of our children.

American consumers, I am certain, are willing to pay enough for their coal to support the miners according to this standard and to afford a reasonable return to the capital invested. They are willing to pay such a price, provided they are assured that the returns to labor and capital are only reasonable and that the pay received is for constant work throughout the year and not for work for two-thirds of the year and idleness for the other third. The mine workers are more than willing, they are anxious, to work 300 days or more a year, but, for reasons no doubt made clear to you by those who have addressed you in person, they have not been granted work every working day of the year, or even for a reasonably sufficient number of days in the year. We have proposed to provide for all-year employment by limiting our work to 30 hours a week, the actual weekly average of working hours given us through periods of excessive work alternating with excessive idleness. This proposal was rejected by the Bituminous Coal Commission and called an economic fallacy. Perhaps it was; we are not economists, but working men who know the mental anguish and the demoralizing effect of irregular employment. We are willing to take counsel with you who are economists as to what is the best way to assure to us an even flow of work that will take care of our needs and at the same time not tax the consumer for more than the value of services rendered. Would a wage fixed on an annual basis accomplish the result, by eliminating the mines

which cannot compete on the basis of full-time labor costs? Or do we need price fixing and wage fixing by a sovereign power? This, gentlemen, is a problem of vital national importance, its proper solution calls for the application of the best brains of the country, coupled with understanding hearts not willing to sacrifice the welfare of hundreds of thousands of miners to the dollar in the pocket of the producer, the middleman, or the consumer. And it is on members of such organizations as the American Economic Association that rests the duty to enlighten and guide public opinion toward a proper understanding and an equitable solution of the problems confronting the bituminous coal industry. We hope and trust that in working out this solution you will not lose sight of the miner, the ultimate producer, who labors in the bowels of the earth so that the wheels of industry may continue to revolve and millions of homes in this land may be kept warm in the heart of winter. I thank you, gentlemen, for the privilege of making this statement.

HUGH ARCHBALD.—A man said to me the other day, "I have a peach of a mine foreman. He cannot read or write but he can make the coal come out." The man who made that remark is a college graduate—energetic, aggressive, of the executive type.

On that story I wish to hang my tale, for, although that incident is an exaggeration from the usual, still circumstances have put the daily life of the men in the mines and their opportunity for earning, as well as the contents of the pocketbooks of owners of mines, into the hands of many such men as that foreman. And damage is done to both parties.

Coal mining is governed by law as no other industry is. It is governed for the sake of the safety of the men employed in the mines. Each state in which there are coal mines has its own code of laws. In some the mine code is very detailed as to what shall be done to protect the lives of the men; in others the law is merely general. The purpose of the law is given as "efficient management," but the provisions of the law go no farther than measures for safety.

One customary section of the law is that mine foremen shall pass a state examination, and another is that the operator shall employ a certified mine foreman who shall have full charge of all work inside of the mine. To get a certificate a man must work in the mines for five years (in Illinois I believe that it is only four years) and the law requires that he shall be a "practical" man.

The intermittent operation of mines makes it necessary that he shall be a cheap man. For expense piles up during idle times. When mines are in operation only two days out of three, then the overhead must be kept as small as possible. So you have men who are now being paid from $200 to $250 a month in charge of all the work of mines employing from 100 to 500 men. In the days when I was a mine foreman, the position paid $125 a month. And the mine where I was working employed between 550 and 600 men, with a monthly payroll of $35,000 to $40,000. The value of the mine can be gauged by the fact that it had changed hands a couple of years before at $600,000, and in addition $250,000 had been spent in rehabilitating it for operation. The foremen of the same company are now being paid $215 a month.

To work long years at manual labor in order to obtain an underpaid job

is hardly a likeable proposition for a college man, or even a high school graduate. So the field is left open to the man who has worked up through the practical work of the mines.

I do not desire to make fun of those who hold the position of mine foreman. For I know many of them intimately and respect them as loyal and hard working men. Personally they are a likeable lot. Most of the practical men who are now mine foremen began working in the old days when there were no child labor laws. Many a man has remarked to me that he was first carried into the mines in his father's dinner bucket, meaning that he was very young when he started to work. As a matter of fact many a man boasts about having started when he was nine years old. Often so much pride is taken in the fact of a youthful start that some men even look down upon those who waited till they were ten years old before commencing to work.

So you have men in charge of the work of other men who have laid track, swung a pick, stood timber, and done all the work there is to do in mining coal. But the doing of work is not an education in that main part of management, which is the coördination of work. The practical man can be forgiven for not realizing the importance of this element of managing mines when you realize that it is a subject which is not taught in colleges.

Coördination of work is an engineering proposition, and there is a difference between engineering and superintendence of work. The one requires the opportunity to stay still while details of work are measured and a whole planned. The other requires constant movements from job to job in order to keep things moving. The mine foreman has to do both elements of the work.

There is an area to cover in coal mining which the stranger does not realize. A mine which is just starting may have a mile of openings into the ground. A mine which has been going for a number of years may easily cover a couple of hundred acres. The men who are doing the mining will be scattered on the outside edge of this acreage. Remember that it is in the dark and that there are many turnings and openings.

Now just as intermittent work requires a cheap foreman, so it also requires that few be employed. The law requires that each working place in the mines—each place where coal is being dug—shall be visited once a day. The mine foreman has to sign a book that he has complied with this provision. It is a requirement for the safety of the men, but the mere visiting of working places takes up so much time that the supervision of the work which goes on in the interior of the acreage of a mine and which ties all the other work together cannot be thoroughly attended to. The routes which a foreman may be expected to cover are generally long. In one case it took me sixteen hours to walk the route which a second assistant mine foreman was expected to cover every morning in four hours. As a result the men who could not be thoroughly supervised while at work had to find their own work and do it too.

Other papers have detailed to you the fluctuation in the operation of mines. But they hardly tell you how fluctuating everything around a mine is, or how that fluctuation has had its effect upon the men to breed bad habits.

A friend of mine—a house painter by trade—remarked the other day that he had employed many a miner to help him, but that it was no use; they were no good, for they would work good till nine o'clock, but at nine they

would have to sit down and eat a lunch. From nine till noon they would work "fair," but after noon you might as well send them home for they were no good at all.

What he said was true. It is an example of the characteristics of coal mining. The miners are not really to be blamed for their bad habits. They are the result of the environment of their work. For 150 years—all the life of coal mining—we have bred bad habits. And for all that time we have had the same causes for strikes and industrial unrest.

For instance, to get around the situation which exists in the supervision of work, in order to get the output, more men are employed in a mine than are needed. And just as there are more mines in the country than are needed for the output which can be consumed, there are more men in the individual mines. I have never yet seen a mine which did not have too many men. Many a mine is all cluttered up with men, so many men that they get in one another's way. Such a situation has a bad effect on the men.

You cannot sit in Washington or Philadelphia or New York and get the facts about coal mining. You must get out at the mines. The costs of coal mining have been given to you as gathered by the Federal Trade Commission. In the lump sum these figures are valuable, but in details they are—I was going to say—not worth the paper they are written on.

You cannot expect the usual practical man around the mines to understand how to study cost sheets. Cost accounting is a paper and pencil job, which swinging a pick and shovel will tell you nothing about. I know as a mine foreman I served under a superintendent who had spent sixty-five of his seventy odd years in the mines and who literally had to put two and two down on a piece of paper to add them together. As an example of how the details of the ordinary mine cost sheets are incorrect, I would explain that this superintendent limited us in the number of pumpmen and timbermen we could employ. It so happened that we were employing the limit of pumpmen and needed another, but we were not employing our limit of timbermen. So we employed a man, labeling him timberman and paying him at the higher rate and using him as a pumpman. As a result in the accounting both our pumping and timbering costs were incorrect.

Coal mining is really a transportation problem underground. For in each mine there exists many miles of narrow guage track and there is the problem of the distribution of cars. It is the same problem which exists on the surface of the earth in the operation of railroads. And each individual miner suffers from the same sort of fluctuation as mines as a whole suffer from. A mine cannot work without railroad cars: a miner cannot work without mine cars.

It takes about twenty minutes to load a ton of coal into a mine car. I timed two men the other day while they were loading coal. It took them eighteen minutes and thirty-five seconds to load two cars, one of which contained 1 ton 2 cwt. and the other 1 ton 5 cwt., which is at a rate better than 1 ton per man in twenty minutes. They were being paid at the rate of 92 cents a ton. But they suffered from the usual conditions of work underground and their total earnings were not very large. Coördination of work is sorely needed in coal mining.

The truth about coal mining will only come out when you take the trouble to go out to the ends of the branch lines of the railroads into the isolated regions where the mines exist. My request can only be that you go into the mines—that you get underground.

# A REVALUATION OF TRADITIONAL ECONOMIC THEORY

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The title of this paper is not to be taken too seriously. What I have to say might be better described by some such title as "Obsolete and obsolescent problems of economic theory." I am using the term "traditional" in a limited sense and am directing attention not so much to the earlier or classical tradition as to more recent developments most of which do not go back so far as John Stuart Mill.

My own generation of economists found itself born into a very stimulating intellectual environment. Spirited controversies were going on among the ablest economists with regard to some of the very foundations of economic science. And there was also radical scepticism, which repudiated all comprehensive thinking and devoted its constructive effort altogether to the study of miscellaneous particulars. The situation was both confused and confusing. Intellectual orientation was difficult to the last degree.

Speaking as one member of my own generation, I believe that we are at last beginning to find our bearings. We are beginning to see our way ahead and to recognize amongst us the definite unfolding of a common scientific purpose. I shall try to present as clearly as I can one formulation of this purpose, in order to explain, in part, why any of us has the assurance to designate as obsolescent certain problems of general theory with which we at one time found ourselves absorbed.

An eminent European economist, writing seventeen years ago, ascribed the confusion to which I have referred to our general preoccupation with the theory of value.[1] He declared in so many words that "the most radical and effective cure for this confusion would be to do away with the whole theory of value" and to begin at once with "an explanation of *prices* and the general causes governing them." He held this procedure to be quite possible and wholly advantageous. The thesis which at that time sounded so radical has since become almost commonplace. Seven years ago the man now President of this Association, after a devastating criticism of traditional definitions of economics, published his ringing declaration that economics "treats phenomena from the standpoint of price."[2] Another eminent American economist, now a man of international eminence, writing about nine years ago, pointed out some extremely serious "limitations of the value concept,"[3]

[1] G. Cassel, *The Nature and Necessity of Interest,* (London and New York: Macmillan, 1903), pp. 68-69.

[2] H. J. Davenport, *The Economics of Enterprise* (New York: Macmillan. 1913).

[3] Allyn A. Young, "Some Limitations of the Value Concept," *Quarterly Journal of Economics,* vol. 25, (May, 1911), pp. 409-28.

and so helped to remove the theory of value from current consideration and to relegate it to its proper place in the history of economic doctrines. Still another American economist, distinguished alike in the fields of economics and statistics, speaking before this Association five years ago, traced with approval "the tendency to make the use of money the central feature of economic analysis," and advanced cogent reasons for expecting the development of this tendency to broaden the scope and to enrich the content of economic theory.[4] The general point of view indicated by these references may be designated as the catallactic point of view. As its meaning comes to be more fully appreciated, the confusion which came down from earlier generations and enveloped us for so long is being gradually dispelled.

The full description of the catallactic point of view cannot be put into a sentence. But its meaning is somewhat precisely indicated by saying that the central task of economics is to study the causes and the effects of the rise and fall of prices—taken both one by one and as related in groups—with the purpose of forecasting their future and possibly controlling their movement. In this formulation, of course, the prices referred to are market prices and they include many things, such as rates of interest and wages, which are not called prices in the language of the street. And the formula is somewhat unsatisfactory in several other respects: It makes no explicit mention of incomes, especially profits; it involves no specific reference to the institution of the market and the technical processes of marketing; and it fails to call sharp attention to the social, ethical, and political motives which alone make the task outlined seem to some of us worth while. But anyone who has worked with this formula, following any problem suggested by it through whatever concrete facts of human nature and the social order turn out to be both relevant and essential, will testify to the enthusiasm which such work engenders. With respect to the one central question about prices and markets, in all its aspects, economists, as I believe, are coming to look upon themselves and to be looked upon as genuine experts, qualified to meet the challenge of all other experts and of the public at large. They are coming to see more and more clearly why this is the one special and expert capacity in which they *must* participate in the advancement of human welfare, and to feel less and less acutely the obligation to speak with any special authority, as economists, upon matters irrelevant to their central question, however fully these other matters may still be treated in textbooks of the traditional type.

Recent developments in the field of social philosophy have clarified

[4] W. C. Mitchell, "The Rôle of Money in Economic Theory," AMERICAN ECONOMIC REVIEW, SUPPLEMENT, vol. VI (Mar., 1916).

our understanding of the relations between human nature and the social order. Social psychologists, for instance, have done much to increase our appreciation of the organic nature of society and to show that human nature, as we know it today, is the product of institutional development reacting upon those impulses and aptitudes which came down to us from our animal ancestors. Thus human nature or human personality serves to integrate the institutions which make up the social order and these institutions in turn are indispensable to the integration of human personality. Among the institutions involved are the family, the church, the state, and various social classes each of which is identified by its community of interest in some specialized phase of the social process. One such institution is the market, which is like all the others in being inspired to some degree by human nature, in exercising its own influence upon human nature, and in penetrating and being penetrated by all the other institutions which make up the social order. My view of the function of the economist is largely determined by the results of this analysis. He is not primarily concerned with the interpretation of human nature as a whole, nor primarily concerned with the study of the social order as a whole, nor yet responsible for the development of any comprehensive science of human behavior. His primary business is to discover the truth about the institution of the market. Economics studies the market as political science studies the state. Appreciation of this analysis seems to me to be fundamental to the catallactic point of view.[5]

One feature of this point of view, likely to appeal most strongly to economists who have the greatest confidence in human intelligence and intellectual power, is its promise of integration and unification. For a full appreciation of it will bring all of us, to the extent that we pose as general economists, to interpret the institution of the market as a whole, and the intricate interlocking price system as a whole, while it brings each of us, to the extent of his special professional qualifications, to interpret the institution in some one of its parts, such as the money market, the market for coal, the field of railway rates, or the labor market. When such appreciation becomes general, if it ever does, we shall probably witness the disappearance of those traditional distinctions, practically genuine enough but never scientifically satisfactory, between the topics of production, exchange, distribution, and consumption, which have for a hundred years been almost standard practice in the textbooks. We shall also demonstrate that there is no sharp contrast between pure theory and applied theory. Who shall say, for

[5] See especially the three works of Professor Charles H. Cooley: *Human Nature and the Social Order* (New York: Scribner's, 1902); *Social Organization* (New York: Scribner's, 1909); *Social Process* (New York: Scribner's, 1918).

instance, whether work on the rate of interest, designed to make possible more accurate forecasts in respect to impending movements in that rate and more intelligent control over these movements, falls in the one field or the other? Most of the older work in the theory of prices has been done with reference to ideal or hypothetical prices in ideal or hypothetical markets. These markets are liquid markets in which there is, literally by hypothesis, a tendency toward the establishment of a single price at which the rate of demand is made equivalent to the rate of supply and vice versa. Such a market, literally by hypothesis, "tends toward equilibrium." But there are no actual markets in which a single price prevails; even in the money market, the most liquid of all actual markets, we find, at present, rates of interest which vary in different parts of the world from perhaps 4½ per cent to 12 or 15 per cent or even more. The money market, then, is not altogether liquid. No other market, however, is nearly so liquid as the money market, and most markets are very far indeed from being liquid markets. If we are to understand prices in these other markets we must study these other markets as they are, collecting the essential facts about each one and interpreting these facts. Both the work of description and the work of interpretation will be helped along by checking the organization of each market against the organization of that perfect or liquid market which the older economic theory has been accustomed to study, but I venture to believe that nothing more is to be learned about perfectly liquid markets. We are at last fully equipped to study actual markets. As we proceed, then, to do so, as dictated by acceptance of the catallactic point of view, we shall be giving to our general subject a degree of unity, precision, and timeliness which will enable economics to sit among the other sciences without an uneasy conscience, and will give to the great body of economists coherence and power beyond anything that the profession has known for a full century.

The accomplishment of our common task, as here outlined, has little or no need for any abstruse theory of value. Realization of this fact comes home to most of us, steeped as we have been in value theory, with some surprise. But the truth seems to be that we are dropping the term value from our vocabularies—except as we refer to market values or appraised values, made definitely intelligible by reference to market prices, either in some actual market or in some such market modified in specified direction and degree. Our procedure in this respect follows rather closely the usage of business men; it differs from that usage chiefly in that we make more distinctions and finer distinctions, such as the one between what the market value has been, as a matter of historical fact, or is now under given circumstances of time and place, and what the market value *ought to be* in view of some legitimate require-

ment of social progress or public policy. Economists who work, for instance, on the practical problem of evaluating the property of a public utility, say for purposes of rate-making, and who realize explicitly just what they are about, afford one of the most striking instances of the newer procedure.[6] Great confusion results, however, from the attempt sometimes made to consider prices as reflecting exchange relations as they are, and values as indicating exchange relations as they ought to be. The distinction we really need is that between what the market price or market value is, on the one hand, and what the market price or market value ought to be, on the other. This distinction emphasizes the importance of the great range of ethical and moral considerations with which we, in common with all other social scientists, must become familiar in order to preserve our intellectual and moral integrity, to avoid using our technical knowledge and skill in the service of powers that prey, and to direct our effort in public affairs along truly progressive lines.

If some more general theory of value were needed anywhere, we might suppose it would be most needed when we come to treat the value of money. We continue, of course, to speak of the value of money, but the catallactic meaning we give to this expression, while somewhat abstract, is neither abstruse nor vague. "We mean the purchasing power of money as reported or expressed by the money prices of other things."[7] And we say, without mincing matters, that "there is no such thing as 'the general purchasing power of money,'" because neither any human being nor any social group either buys or sells, at any price, on the market, any such thing as a certain quantity of things-in-general. So money has in reality not one value but many values, a million indicated by the price quotations for a million different articles in almost as many markets, and a thousand for as many different groups of selected articles entering into the purchases or sales of selected families, business firms, and social groups. The values of money rise and fall, in all of these relations, as the prices concerned fall and rise; the causes involved are the same causes and the consequences are one and the same. Thus the theory of money, of the value of money, comes to be incorporated in the general theory of prices, where it forms one of the most difficult, interesting, and promising problems. No one anywhere, or at any time, so far as I am aware, has ever said that this problem belongs to anybody but economists; it is a typi-

[6] See for instance remarks of Joseph Mayer, American Society of Civil Engineers, *Transactions*, 1915. Vol. 79, pp. 177-89.

[7] R. T. Ely, *Outlines of Economics* (New York: Macmillan, 1916), p. 317. This is the third revision of Professor Ely's *Outlines*. The reference is to a part of the book for which Professor Young was presumably responsible.

cal and characteristic problem. And no economist, if I may say so, has ever been helped toward its solution by starting his investigation on the basis of some general theory of value, particularly any theory of value which rested upon marginal utility or upon marginal disutility or upon some combination of the two. The really promising results have been obtained by work done on the history of price changes and on the scientific explanation of that history.

Our analysis now begins, then, with the immediate observation of market price and not, as formerly, with "the inscrutable depths of the private mind."[8] It no longer proceeds from desire to utility, from utility to marginal utility, from marginal utility to subjective value, from subjective value to objective value or exchange value, then from exchange value to price and finally from price in general to market price. Utility and disutility, diminishing utility and increasing disutility, the utility curve once supposed to be back of market demand and the disutility curve once supposed to be back of market supply, marginal utility and marginal disutility—all these belong to that list of topics in which we were once deeply interested, but in which we are becoming less interested with every passing year. Along with them are departing all the other members of the utility family, such as marginal desirability and marginal significance, sub-marginal and extra-marginal utility and disutility, producers' surplus and consumers' surplus, social surplus and social deficit. All theories of value involving the hedonistic calculus, in short, are in process of complete disappearance from the consciousness of constructive workers in economic theory. It is no part of my present intention to specify in detail the shortcomings of these theories of value, but I will venture to make one sweeping generalization: To the extent that economists have been so strongly obsessed by the hedonistic calculus, they have placed in the foreground of investigation problems so phrased and so conceived as to make impossible both the appeal to history and the statistical attack.

In respect to the great problem of distribution a thoroughgoing renovation of traditional apparatus is in process. The problem retains all its passionate interest, but no longer seems to stand out by itself. There is nothing peculiar about such prices as the rent of land per acre per annum, wages per day per man, interest per annum per dollar and the like, and the respective markets in which these prices prevail, to any economist who has come to look upon the interpretation of all prices and all markets as the one great problem of general economics. The income problem, that of determining the reasons why individuals, business firms, and classes in society have so much or so little of salable things to sell in these markets at these prices, is part of the solution

[8] Cooley, *Social Process*, p. 297.

of that one great problem. Little or no light is shed upon it, as we are coming to realize, by those theories of value and of distribution which involve the marginal productivity analysis.

We are beginning to see that the marginal productivity theory—apart from certain ethical implications explicitly repudiated by careful productivity theorists—has never contributed much to an understanding of distribution. Its general meaning can perhaps be summed up in one comprehensive formulation. Free enterprise, operating in open markets, tends to carry the substitution of measurable quantities of every factor for measurable quantities of every other factor to the point at which a dollar's worth of each, as valued on the open market, will accomplish the same mechanical result as a dollar's worth of every other. Formulated in this way, the marginal productivity theory of distribution can be seen to be nothing more than a refined elaboration of the law of single price in liquid hypothetical markets. All the work of studying actual markets remains to be done. And if we suspect this formulation of superficiality, and seek to "go behind" it in search for whatever additional meaning the theory possesses in the minds of its particular friends, we discover that the marginal productivity theory of distribution, resting at bottom upon the hedonistic calculus, asserts that the marginal disutilities involved in production correspond, after some fashion, with the marginal utilities involved in distribution and consumption. As to this apparently more refined formulation two observations are in order: First, it is incapable of statistical verification because of the fact that utilities and disutilities are not measurable magnitudes. Secondly, the more refined formulation is not one bit more profound than the other; it is in fact quite as meaningless as any other application of the hedonistic calculus.

We do more than suspect, therefore, that the marginal productivity theory of distribution is an explanation which does not do much to explain "why some of us are much better off and others much worse off than the average."[9] Some of the most competent of its friendly expositors indeed say quite frankly that "the principle of marginal productivity is an illuminating way of stating the problem of the distribution of wealth, rather than a solution of it."[10] And they go on to note that the purpose of the analysis of diminishing productivity is "to open the way for a discussion of the prices paid for the services of land, labor, and capital."[11] Economists who have formed the habit of looking into markets, prices, and the great intricate interlocking price system, in all the concreteness with which these surround us, are dis-

[9] Edwin Cannan, *Wealth* (London: King. 1914).
[10] Ely, Third Edition, p. 400.
[11] *Ibid.*, p. 394.

posed to doubt the degree of the "illumination" and to wonder why "the way" to so obvious a task needs to be so very thoroughly prepared. The way is now open, in any case, so that we may feel quite free to proceed, without further preliminary, with our study of prices and incomes, searching out all those persistent historical and social influences—beneficent, malevolent, or neutral—which have determined and continue to determine the amounts of salable things which different individuals and classes are in a position to sell or to buy at these prices.

Let me present one more crucial instance, the problem of the so-called business cycle, arising naturally in all minds which contemplate those alternating periods of prosperity and depression, good times and bad times, which have become so profoundly significant during the last hundred years. This is another of those problems which has always been conceded to economists by common consent. The public looks to them both for an explanation of why such things occur and for constructive suggestions looking toward their prevention and mitigation. The challenge presented by this problem is unescapable, and an increasing amount of scientific work is being devoted to it. Business barometers, so-called, indices of general business conditions, the correlation of statistical series of a hundred kinds are being worked upon, analyzed, interpreted, and used for purposes of forecast and control. Those who have aptitude for this great problem, and who have once felt its fascination, cannot be drawn away from it; they feel its intellectual charm, and they know how much its correct solution means to the welfare of humanity. In many respects it is the primary problem of our time, and there is no other problem, be it noted, which cuts so sharply and so unmistakably across the traditional divisions of production, exchange, distribution, and consumption.

Yet how little attention is given to this problem in current textbooks on the principles of economics. How little, in fact, has been contributed to the solution of this problem by that whole body of effort which was centered about the theory of value, and interested in distilling the relative amounts of truth in the marginal utility theory and the marginal disutility theory. And the reason is not far to seek. The problem of the business cycle is a social problem, the phenomena of antecedence and consequence are social phenomena, whereas the preoccupations of several generations of economists have been individualistic. They could use no such thing as social marginal utility or social marginal disutility, for there are no such things; such shadows of shades afforded no means of attack upon social problems, such as the problem of crises and depressions. The root of this problem is surely in the price system, and can be arrived at only by going into the history of crises, which means the history of modern society—and the value theorists

never found any genuine place in their analysis for the history of anything. Even historical chapters used as introduction to textbooks on principles of economics were little more than patchwork, for they were seldom referred to in any other part of the book.

We need to know what profits have been, how they have been made, to what uses they have been put, and the effects upon human nature and the social order of the profit-making motive: no light on these matters is shed by the analyses of value, of utility and disutility, that have preoccupied so many of us for so long.

The bewildering period into which my own generation of economists was born seems to have been blessed with a noble scientific heritage, but one that was already in process of thoroughgoing regeneration. Magnificent critical work has now been done on that heritage and painstaking intellectual experiment, based on certain traditional methods of attack, has measurably demonstrated the inadequacy of those particular methods. The way to constructive work has meanwhile become more and more evident, and there seems to me every reason to believe that the scientific outlook for the next ten or twenty years is highly encouraging. A most encouraging feature of that outlook, in my judgment, is a growing disposition amongst us to recognize the obsolescent character of some of the questions with which we have ourselves but recently been wrestling and to call them by their right name. They belong to that group of questions found now and then in the history of science and philosophy "which are settled, if at all, not by being decided one way or the other, but by becoming obsolete."[12]

[12] Cooley, *Human Nature and the Social Order*, p. 19.

# SOUNDINGS IN NON-EUCLIDEAN ECONOMICS

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It is fairly obvious, if one stops to think of it, that there are systems of economics with axioms fully as far removed from each other as the geometrics of Euclid and the non-Euclideans; perhaps as far apart as the conventional physics and Einstein. Probably the foremost non-Euclidean economist is Professor Veblen, and his theory of invidious prestige might be called a theory of economic relativity.

Orthodox economics undertakes to interpret equilibrium: Veblen undertakes to interpret progressive change. And in the social world this is much the same as saying that orthodox economics studies the assumptions of contentment and Veblen the assumptions of discontent, both of which are undeniable facts. Since undeniable facts are difficult to ignore, the net result is very largely to call them by different names. So when Veblen says that the inherent nature of business is parasitism and that any modicum of service rendered is rendered incidentally and in spite of the inherent nature of business; and when orthodox economics says that the inherent nature of business is service, and that any modicum of parasitism that may remain is an incidental perversion of the true spirit of the institution—they may not be contradicting each other quite so flatly as they seem to be. Veblen is talking about the nature of the pursuit of profits; and the beneficial effects of competition, where competition works beneficially, are an incidental check and very partial (and possibly a temporary one) on the natural tactics of the pursuit of gain. Orthodox economics is talking about the nature of competition (or perhaps of an ideal form of competition) as a check on human selfishness in the pursuit of profits and to them any failures of competition to produce its full effects appear as incidental. In a general way most economists admit the same general mass of facts, but pick out different ones as the central axioms of their systematic economic theorizing.

What do I mean by non-Euclidean economics in the present instance? The question can best be answered by taking six axioms which represent in a general way what might be called the orthodox position on a number of important points, and inverting them. One reason for calling this "non-Euclidean" is that, as I understand the attitude of non-Euclidean geometry, it does not necessarily insist that Euclid is nonsense nor declare implacable war on his system and insist on its immediate abolishment. It merely studies the possibilities and consequences of contrary assumptions. In the present instance this is not a mere game of logical gymnastics: it is the natural result of studying

those facts of human existence which Euclid, as represented by these six axioms, somehow fails to interpret. Much of what I shall have to say is not new—perhaps none of it is—but, after all, economic theory consists largely in organizing and interpreting known facts rather than in the independent discovery of raw facts hitherto unknown. Time permits little more than mention of the first four points, and a very brief development of the last two.

*Proposition* 1. *Economics is the science of wealth, and wealth consists—of things* (a) *useful,* (b) *limited in supply,* (c) *exchangeable,* (d) *appropriable.*

The alternative proposition is that the most important subjects of economic study, while useful and limited in supply, are not appropriable and not fully exchangeable, and thus are not wealth in the full sense.[1]

Since the consequences of this have been developed by a number of writers, I will merely mention one very interesting corollary: namely, that in the marginal-productivity economics power to produce cannot exist apart from power to withhold. Many things may be useful and limited in supply, but only those which the owner has the option of withholding have a marketable marginal product. What is marginal productivity? It is essentially the power to make a differential addition to the income of an enterprise. This means to make this income greater if one grants the enterprise the use of the productive factor he controls than it would be if one withheld this productive factor. In this sense an invention, once made public, is not "productive," and the inventor is not a productive factor, with respect to any past invention, except as he keeps patent rights which enable him to withhold it from the market, and hence to bestow it on the market. He cannot freely bestow it if he cannot also freely withhold it. Other applications of this proposition are interesting, but we must pass on.

*Proposition* 2. *Consumption is the end of economic activity and production is a means to that end.*

This proposition may be broadened; increased productive power is used to make working hours shorter and to some extent to make work easier and more pleasant. This is in general harmony with the proposition that production is looked on as a necessary evil and a means to an end: the less time we spend at it the better. The general proposition seems obvious, and is obvious from the point of view of the individual. When it comes to society's interest, the question is not so clear. So-

[1] The germ of this proposition is at least as old as John Stuart Mill (*Principles of Political Economy,* Book V, Chap. XI, sec. 14); Sidgwick also develops it (*Principles of Political Economy,* Macmillan ed., p. 404 ff.) and it plays an important part in J. B. Clark's *Philosophy of Wealth* as the "theory of inappropriables."

ciety's purposes are supposed to have something ethical about them. To take consumption as the end of all things corresponds to hedonistic ethics, whose standard is the receipt of pleasurable sensations, but the more modern ethics emphasizes rather the well-rounded development and use of human faculties. It is an active and not a passive standard, a standard of output of energy and not of receipt of sensation.

This makes it seem that our activities are more important than the passive pleasures we receive, and the activities that really develop us most are those where we are faced with the biggest difficulties. This means, commonly, things we would not voluntarily do simply for the fun of doing them. It means work, in one form or another, rather than play. The conclusion is that the quality of the activity involved in work is more important as a positive social value than the quantity or quality of consumption.[2]

There is a twofold need: for work of a sort which, if a man gives his best to it, will develop and not crush him; and for incentives that will make him give his best. And the two needs are more nearly one than economic theory is accustomed to assume. Starvation, poverty, and ambition for increased wealth have successively worked themselves past the point of diminishing return as incentives for the mass of labor, and the search for new incentives must focus on other things than wage-scales. In this respect, the worst evil is to deny those incentives that represent what man recognizes as best in him. If selfish incentives cease to work, that is a failure: if unselfish incentives have no opportunity to work, that is a tragedy. The partial breakdown of the traditional selfish incentives in industry, which is now disturbing many minds, may prove a blessing in disguise, and one of the greatest of social opportunities.

*Proposition 3. The standard of economic service is the gratification of human wants through the increase of marketable goods and services.*

This does not intend to deny that the development of good types of human beings is a more important thing, but it singles out increased wealth as the economic way of making possible the development of the best human type, leaving humanity to use its power as its wisdom or folly may suggest.

In this matter economics has tried to keep itself separate from ethics and to take the attitude that it is not concerned, as economics, with the wisdom of the use men make of wealth. Its ideal is well ex-

[2] This idea, again, is not new. It goes back to Ruskin and William Morris, and back of them to the Greeks who graded occupations according as the kind of activity involved was or was not consistent with the "good life" as they saw it. Modern studies of human nature are trying to give us more scientific standards of judgment in these matters, and the results so far are promising and valuable.

pressed in the maxim of Francis Bacon, quoted by Jevons in the introduction to his *Theory of Political Economy:* "While philosophers are disputing whether virtue or pleasure be the proper aim of life, do you provide yourself with the instruments of either."[3] It has, then, as an ideal a sort of undifferentiated power over nature which man is to secure, and which he can then put to any use, good or bad. The increase of this power is economic gain: the quality of the use made of it is a separate question and not an economic one. This is a very natural position, but there is one trouble with it. The methods of production which increase our power have in themselves qualitative effects on human living of a very direct sort, some of which have already been mentioned. And these effects on the quality of life are not marketable commodities which can be weighed in the same financial scale with the increased supply of commodities which modern industry furnishes.

Moreover, it may be argued that the tendency of population to increase has the effect of neutralizing the greater part of man's increased productive power, so that by far the greater part of it goes in maintaining increased numbers in the face of the principle of diminishing returns, and the increase in per capita wealth is but a small fraction of the percentage of increase in our essential power over nature. One might go farther and say that it is a positive injury for humanity to learn enough about the arts of production to use up all the best of the earth's limited natural resources and occupy all the available territory, until they have learned how to put them to some better use than, for example, they have been making of them in the past six years.

I am not advocating inefficiency, though there are some sorts of inefficiency for which a good deal might be said. So long as war exists, any civilization that systematically practiced inefficiency for the good of future generations would be speedily displaced by one with less refined ideals and more immediate horsepower. Efficiency is inevitable and, in moderation, not undesirable. But what I am suggesting is that, instead of taking the quality of man for granted and focussing attention on quantity output, it is much more pertinent for the social student to take quantity output for granted—business will not neglect that—and direct his chief attention to the qualitative effects on humanity of the things they do in their inevitable (but largely self-defeating) striving after increased per capita wealth.

One might suggest that in the economy of nature and of her creatures means and ends are reversed: that the creature's ends are nature's means of gaining her ends, and the activities which serve the creature as means of attaining his ends are the things nature is really after.[4]

[3] This is the concluding sentence of Jevons' Introduction (4th ed., Macmillan, p. 27.)

[4] If this figurative personification of nature appears unscientific, nature's purposes

Primitive man is interested in stilling his hunger and to get food he endures enormous fatigues, taxes his rudimentary ingenuity, and perhaps makes a minute improvement in the stone axe or the bow. Nature is not interested in stilling his hunger; in fact, she takes very effective measures to see to it that he shall be chronically hungry in order that he may continue to endure fatigues, to tax his ingenuity, to struggle, and as a result to develop biologically into a type with higher faculties. Now that we have supplanted nature's jungle with our man-made jungle of mines, factories, railroads, hotels, jails, hospitals, almshouses and what not, who is strong enough to do what the older jungle did for our ancestors—overrule our purposes for our own good and save us from the danger and possible biological disaster of getting what we think we want?

*Proposition 4. As a general rule, cost varies in proportion to output: "overhead costs" which are independent of output are the exception and arise in connection with large fixed capital only.*

As an alternative, consider the proposition that overhead costs are not merely the general rule but are universal, and that the costs that are "direct," or "variable" or "prime costs" from the standpoint of the employer are overhead costs from the point of view of society. Every laborer is his own "overhead" and has his constant costs to meet, whether he is working or not. Society has so much productive power. It cannot avoid the cost of either (1) maintaining this productive power, including the human beings who compose most of it, or (2) seeing it depreciate. The power of the entrepreneur to reduce expenses by reducing his working force, where this means unemployment, is for the most part a financial illusion arising out of the fact that the individual employer does not have to pay the constant costs of the labor he turns off.[5]

This principle has many possible applications, largely in the direction of placing the burden of labor's overhead cost on those bearing chief responsibility for the industrial cycle, and where it will have the greatest effect in stimulating people to do things to relieve the irregularities. It is one tremendously important instance in which social accounting and business accounting diverge and in which the social accounting is not yet organized and explicit.

*Proposition 5. The rational foresight of individuals is at the basis of individualistic economics.* In particular: business men know the

with man may be translated as the requirements of man's biological development, which undoubtedly contain a sounder standard of human welfare than the gratification of his immediate conscious desires.

[5] This general point has been developed by G. P. Watkins: "A third Factor in the Variation of Productivity." American Economic Review, V. 753, 770-77.

"best combination of factors" and the marginal productive worth of different factors, and on this the efficiency of individualism depends. The question at issue is not whether people are thus intelligent, but whether an economics, founded on the idea that they are, is really a sound basis for individualism.

Let us study for a moment a hypothetical society made up of individuals gifted with this degree of intelligence and foresight. Would this be peculiarly favorable to individualism? Business would be highly efficient, it is true, but there is serious question how long beings with this much foresight would continue to compete. Such beings would not let the coal business run in the wasteful way which was described to us this morning. They would long since have introduced such methods as Mr. Mason and others spoke of, and in the process they would have integrated the industry to a point where wagon-mines and backyard wheelbarrow mines could not offer serious competition to the organized large-scale producers. And there would be a Federal Commission.

Perhaps in this hypothetical society employers and employees in, let us say, the building trades, might both get tired of the competitive struggle and unite to assist each other in excluding competitors. If they were very foresightful they might cover up their tracks so well that even Mr. Untermyer might have difficulty in getting evidence enough to make a case. The "best combination of factors" in this case would consist in putting some of the very best brains to work on covering up tracks, and the marginal worth of high-grade brains in this occupation would be extremely high. Since the employers would know all this, highgrade brains would be so employed and lavishly rewarded. On the other hand, the marginal worth of brains spent in detecting such conspiracies would also be very high, and government would know this (by hypothesis) and would bid against private enterprise for the same grade of brains. Thus a large part of society's ability would be devoted to this interesting game of hide-and-seek; to making and contesting valuations of properties; to checking up accounts, inspecting products to enforce standards of quality and service, and many other similar occupations; and their pay would absorb a considerable part of the national income.

Meanwhile, if people in general could choose intelligently for the future they could and would vote intelligently and select able and honest officers of government, and government departments would be very efficiently run because their heads would know the "best combination of factors," and the "marginal worth" of talent, and would be able to get appropriations that would enable them to bid for it. Their budget system, based on knowledge of the relative marginal worth of different

lines of public expenditure, would furnish something society has long needed—a system of social accounting in terms of national welfare. Thus we should have on the one hand enormous waste in the attempt to control private industry, and on the other hand government departments quite as efficient as private concerns and able to avoid the wastes and duplications either of competition or of regulation. Under these conditions any people with such intelligent foresight as we have assumed could not fail to see the obvious advantages of national collectivism, and we might expect to see it adopted as rapidly as an efficient government bureau could handle the necessary accounting.

But suppose, on the other hand, we assume a population of little foresight, who therefore cannot safely depart far from custom, who are governed much by imitation and suggestion from their fellows, who learn only by making mistakes and being hurt, and who do not know the "best combination of factors" nor the marginal worth of different factors of production. In such an imaginary society, private production would not be very efficient, judged by absolute standards of what is technically possible. On the other hand, a considerable amount of competition would survive for a long time, perhaps indefinitely; partly because it is customary, partly because competitors do not look far ahead, and partly because they are influenced by the suggestive force of a moral code which considers monopoly as contrary to the public interest.

With competition, however, goes a weeding out of the least efficient, which means eliminating the widest departures from the "best combination of factors" and from the system of paying factors of production according to their marginal worth to the employer, and placing them in industry on the same principle. The survivors would be those who, by luck or intuition, came nearest behaving as they would if they had known what the "best combination" was and what the marginal worth of productive factors was. The force of competition would put pressure on business to install cost accounting systems in order to lessen its ignorance of how much productive factors are worth, and to employ engineers and efficiency experts who, although they may not know the absolute "best combination," may at least be able to devise ways of improving the combination that exists. Thus there would be forces working in the general direction of efficiency and of a rough approximation to an organization on the basis of marginal productivity.[6]

On the other hand, government departments would not only suffer

[6] Professor J. B. Clark has, in lectures, made the point that the marginal productivity theory does not require perfect knowledge on the part of business men of what "marginal products" are; but that the force of competitive selection works in this direction automatically.

from not knowing what the "best combination of factors" was, but they would lack the saving grace of competitive elimination to work automatically in that direction, or to put pressure on their administrative heads to install efficient systems of accounting and research. In such a purely hypothetical society, we might expect that the accounting systems of government departments would be far inferior to those of private business; and would be, in fact, inadequate to show how much public services cost, let alone the marginal worth of different productive factors taking part in those services.

Not knowing how much factors of production were worth, government would tend to underpay the highest employees and fail to secure the highest talents in competition with private industry. Moreover, a people of this mental type would be less able to vote intelligently than to buy goods intelligently, since voting makes peculiar demands on the powers of foresight, while the buying of goods can be much less wastefully done by the method of trial and error. Most marketable commodities are renewed far oftener than is the incumbent of a political office, and of those that are not, few commodities are selected without more intelligent study of values than the average voter makes of the average candidate on the average American long ballot.[7] Thus in this hypothetical society there would be less chance of getting able public officers than able business men. And though the absolute efficiency of private enterprise would be far less than in our first hypothetical society, that of public enterprise would suffer still more. In the second society, private enterprise would be more efficient than public.

The tendency to combination would undoubtedly appear, though restrained by the custom of competition and the moral mandate for it. The attempts of government to curb combination would be largely abortive, but the people might still prefer a moderate degree of exploitation to the inefficiency of government operation, or to the effort and uncertainty of conceiving and working out some other substitute for individualism. After some trying experiences, business would probably learn to keep its exploitation within the limits of the people's toleration, not so much from shrewd calculation as from natural hesitation to break with custom and morals, and from the habit of feeling one's way in any new policy. And thus individualism might continue.

Thus it appears plausible that the strongest basis for individualism is not the intelligence of individuals and their irrevocable devotion to the pursuit of their own self-interest, but rather their stupidity and their susceptibility to moral suggestion. Individualism may be re-

[7] *Cf.* T. N. Carver's suggestive comparison of political and economic competition in his *Principles of Political Economy*, p. 328, and in his *Essays in Social Justice*, pp. 111-25.

garded, not so much as the system calculated to get the utmost out of a people of extremely high intelligence as the system in which human stupidity can do the least harm. All of which is not so very new, but is more akin to the general trend of Adam Smith's economics than to the Austrian school, and really harks back from marginal utility economics to the earlier classical proposition that individuals can choose for themselves—not with absolute accuracy—but better than any government agent can do it for them. This is a theory of relativity rather than one of the absolute efficiency of individualism as a system by itself.

After all, at the present time one of the most important facts concerns, not the general level of intelligence, high or low, but the differing degrees of training and special information on different topics; the extent to which the specialist in this age of specialists has information beyond the unspecialized man in the street, and the ability of the unspecialized "people" to cope with the specialist who has his axe to grind. This is one of the very large problems for the "economic man" of the twentieth century.

*Proposition* 6. *Capital, including machinery, consists of instruments of production utilized by human beings for the production of wealth.*

Let me suggest the alternative proposition that human beings are instruments of production utilized by machines for the machines' increase and biological development. This is not a new idea. Samuel Butler carried it to the point of suggesting that machines might develop consciousness and thus enslave mankind, though in these days of behaviorist psychology the question whether the ruling race possesses consciousness or not may be regarded as obsolete. A more real question is: how many and how important and far-reaching are the things the machines have done to us which we did not intend nor foresee, compared to the things we specifically employed them to do? On this point, some things have already been said (sections 2 and 3 above).

Among economists and social scientists, Veblen has described how machines train and educate human beings.[8] A. S. Johnson has pointed out how the nominal captain of industry is ruled by the processes he presides over.[9] Cooley has asserted the existence of impersonal forms of life with life-processes independent of those of the human beings who impinge on them and further their growth, and he mentions industrialism as one of these forms of life.[10] The Economic Interpretation of History implies that the machines control human life and organization in its highest forms.

[8] *The Instinct of Workmanship*, pp. 311-27.

[9] "The Soul of Capitalism," Unpopular Review, April-June, 1914, pp. 230-1.

[10] *Social Process*, pp. 6-26.

Machines may be conceived as making bargains with man in which they offer him things he very much desires, and in exchange bind him to serve and maintain them, to eliminate the unfit among them and promote their racial progress, and to alter his own social and political arrangements in whatever ways may be necessary in keeping pace with the increasingly complex social organization of the machines themselves, and in keeping the children of man faithful to the service the machines require. The full nature of the terms of these bargains are not revealed to man until he is so fully committed that it is too late to turn back, and thus the machines outwit him. For example, they took Adam Smith into their confidence, but only so far as suited their purposes. By such methods they have succeeded in imposing on man many things he never bargained for, some of which he finds extremely unwelcome.

Some might think this shows a low standard of honesty on the part of the machines, but we must remember that honesty is the morality of equals toward equals, not of superior to inferior races, and that our own conduct toward inferior races will hardly stand a critical examination. At least machines have not forced their culture upon us by armed violence. Among their own kind, they show a sense of the superior importance of biological progress to immediate gratification and a subordination of the interests of the individual machine to the progress of the race, which demonstrate a clear moral superiority. Seldom or never, as in Arnold Bennett's *Milestones*, does the older generation cramp the development of the younger. They give way without complaint, youth is served, and the interests of mechanical posterity are paramount.

The machines appear to have kind intentions toward man, but to lack understanding of many of his feelings and needs; as is frequently the case with ruling and subject races. They have revolutionized both work and product, taking the element of universal individual initiative out of both. They have given man unnatural working conditions which are now leading to incipient revolt, and living conditions that go far to defeat democracy. They are responsible for the "industrial cycle," and as long as their own overhead costs are covered in periods of depression, they have not assumed full responsibility for the corresponding overhead costs of human beings. They have largely taken over the drama without caring to preserve what human beings regard as the highest standards of taste, and they have, intentionally or unintentionally, gone far to undermine the church and even religion itself. They have incontinently switched us from a paternalistic to a laissez-faire type of government and are now busily switching us back again, according to the temporary needs of the stage of development they have reached. These are merely examples.

As for their methods of maintaining control: some classes they bribe with large rewards, other classes, largely technicians, and technical-scientists, do not need to be bribed: their minds are captured by the material they work in. And the unspecialized "ruling classes," voters or congressmen or others, cannot cope with these specialists, who are left to do more and more of the governing in the shape of the actual working out of things. The ordinary man cannot even speak the dialect in terms of which many of these issues are settled; for example, the accounting language used in settling the justice of street-car fares. The machines have cleverly limited human coöperation by splitting human language up into many dialects of many specialist groups, so that the highest common factor of intelligibility, so to speak, for humanity as a whole, consists of relatively simple ideas, largely obsolete in the sense of not actively gripping the newer issues. Among these ideas might be mentioned the simple ideas of public and private ownership. As men become more dependent on machines, the latter become able to rule by penalties as well as by rewards: for example, our recent heatless Mondays and other penalties imposed by failure to develop our railroad system to a continually increasing size and complexity of articulation. Thus mankind moves in directions it never intended, getting largely things it never definitely wanted as the unexpected result of engaging the services of unexpectedly powerful instruments.

What I have called Euclidean Economics, in general, serves the interests of the machines. It directs attention to the bribe they offer, and away from the conditions they exact. It has countenanced the machines in neglecting to assume the burden of human overhead costs, and in this, as in other matters, by insisting on putting man on a higher level than machines in respect to freedom, it has sometimes put him on a lower level in respect to care for his material needs. This has its fine side, but by teaching man that he is the end of all things, when he is not, his subjection is concealed and thus perhaps perpetuated.

I do not advocate revolting against the machines and abolishing or subjugating them: all I aspire to is a reasonable degree of racial equality. This would make for more friendly relations and would help to allay the distrust of the purposes of the machines which now prevents us from getting all the benefits which they are able and willing to give us. This is peculiarly true of labor, but not of labor alone. This morning the machines, *via* Mr. Mason and others, made us a most alluring offer of increased coal production and I noticed this intelligent assemblage looking this gift horse in the mouth, debating whether this would force upon us a federal commission or federal operation, and whether we wanted these changes in our economic and political order. This distrust is a hopeful sign so long as we cannot tell what kind or

degree of social and political transformation the machines would force upon us. It marks a notable advance on the usual method of accepting the offer first and railing at the consequences afterward. But we must become far better informed and surer of our own intentions before our dealings with the machines can be characterized by that confidence which marks the bargaining of equals. To attain this we must not merely develop the ability to rise superior, if necessary, to the immediate bribe that is offered us; we must become competent to bargain, as the machines do, with an intelligent eye to our long-run racial and social interests.

These interests are most seriously threatened in the case of labor. The machines tend to confine discretion in industry to the few whom they take into their confidence, while the bulk of labor has largely lost the power to make any constructive contribution to the technique of industry. The job belongs to the machine, and labor feels little responsibility for it. Labor's state of mind and conduct shows the consequences of this, and many laborers appear to alternate between the slave-morality of getting as much as possible and giving as little, and the spasmodic need of exerting power of some sort. Under the circumstances this can only be power to interfere with the orderly progress of industry by strikes or sabotage, since power to improve on the operations laid down by the machines appears to be beyond labor's present reach, either for lack of competence, ambition, or opportunity. Racial equality can never be established so long as the bulk of mankind are in this position of undignified and passive inferiority.

The situation demands social organizations capable of exerting the force of constructive human will enlightened by collective intelligence, *at the point where things are being decided, in the processes of industry itself*, rather than waiting till the decision is made and then, through our "political" machinery, taking belated and purely defensive action.

## TRADITIONAL ECONOMIC THEORY—DISCUSSION

IRVING FISHER.—In commenting on the foregoing papers, I will only say that I feel that there is an undue tendency to react against theories of marginal utility because we have expected more of them than they have yielded. Such revulsions of feeling create alternate fashions in economic theory, and fashions should have no place in science. There is a solid basis of truth in the theories of marginal utility which should not be lost but used as foundations on which to build.

FRANK H. KNIGHT.—Considerable courage is doubtless required to say anything in defense of economic theory in any of its familiar aspects after the presentation of these two papers, not to mention those given this afternoon, in which "theory" has been pelted with missiles of every degree of

consistency. Yet the embarrassing fact to me is that I still see significance in our inheritance from the past hundred and fifty years, although I am also in agreement with much of the argument to which we have listened, on its positive side. Much controversy among economists is due to differences in their conceptions of problems and methods of attack, and not to real antagonism in theoretical position. In my opinion a great deal of it rests upon a single confusion, the failure to separate clearly the question of explaining the price system and the competitive organization of industry from the question of criticizing or evaluating it. These functions are most intimately connected and both are within the task of the theorist; but they are not identical and it is a mistake to criticize him because what he says on one of these problems is not directly relevant to the other.

A good illustration is to be found in two articles in the current and preceding issues of our REVIEW, in which Professor Fetter criticizes Professor Mitchell's paper presented to the meeting of five years ago, under the heading of a contrast between price economics and welfare economics. It is improbable that Professor Mitchell is less interested in human welfare than is Professor Fetter. The difference is in the two thinkers' conceptions of the meaning and use of scientific method.

In the field of explaining phenomena the critics condemn the theorist for using simplified assumptions, some even going so far as to accuse him of not knowing everything about our economic system and all the details of its workings. Knowledge of facts, even of details, is very good, and the more of it the better. But someone must think out the general problems, too. And since detailed knowledge of any large part of the field is impossible to any one man, it is inevitable that the theorist must see his facts largely through other men's eyes. Division of labor is indispensable. The business man and practical worker must complete and correct the general principles worked out by the theorist in applying them to their own problems. They cannot, however, usurp the theorist's place. Their knowledge of facts though fuller, applies to a limited field and is necessarily onesided. They are in the position of being unable to see the forest for the trees. Moreover, a clear and consistent body of general theory is necessary as a guide to the observation of facts.

It is an oft-told tale but will bear repeating with emphasis until it is more commonly understood, that the general theory of a subject is not supposed to give a realistically complete account of it. The function of theory is to identify, isolate, and trace out to their final consequences the more fundamental tendencies discernible in a complex mass of phenomena. The effects of causes must be investigated separately, and be combined after we know what they are. To ascertain just which causes are at work in any case and to what extent, and to combine their results in a concrete prediction of outcome, is the province of the application of principles, not of the derivation of principles. Moreover, the general principles are always very incomplete. The scientific method has rather narrow limits, especially in dealing with human behavior and social phenomena. A large proportion of the forces which must be taken into account cannot be reduced to general principles. Such problems can never be dealt with by formula or rule of thumb. It is no criticism of general principles that their application must call for a large use of common sense and trained judgment.

One speaker this afternoon (Dr. Wolman) was candid enough to admit

that the critics of the simplified psychology used by economic theorists have made little headway in bringing forth substitute principles. I do not believe they ever will. Their strictures are valid as *limitations* on the familiar reasoning, not as negations. The principles of the established economics are partial statements, but sound as far as they go, and they go about as far as general principles can be carried. If theorists and practical economists are to get together, the latter must be moderate in their demands, accepting the service that theory can render and not expecting the impossible; and on the other hand theorists must be more modest in their pretensions than some of them have sometimes been. General theory is a *first* step, but never a very long step toward the solution of practical problems.

So I see nothing antagonistic to the spirit of the "Euclidian" economics in Professor Clark's proposal of reversing certain of its assumptions. Opposite tendencies may be and often are real and effective in different situations, and even in the same situation. Economists have habitually studied both monopoly and competition, which are opposite tendencies, without any feeling that they were manipulating a paradox. Some of the inverted postulates which he suggests are important and neglected. I think this is especially true of the relation between production and consumption as means and end. In many cases it is far more nearly true that consumption is the means than that it is the end, but it would surely be "advancing backwards" to work out our economics on the assumption that such is always the case. The correct course for general theory is to study both tendencies and leave it to the practitioner to use the results which fit his own problem —or rather perhaps to find the proper combination of the two, for I imagine that the relation between means and end is usually more or less reciprocal, one or the other direction predominating in various degrees.

Professor Parry's attack on the two cornerstones of established theory, utility and productivity, illustrates, I think, in a particularly apt way the confusion between explanation and evaluation. I fully agree with him that utility is misleading as an explanation of economic behavior. The consumer is not in the sort of situation assumed in the theory, and when utility is made over into relative utility in terms of money there is nothing left of it but the fact of pecuniary demand. Utility is not meaningless or unreal, however; it is only irrelevant to some of the purposes for which it has been used. When we come to pass judgment on the workings of the price system, we have to have a theory of utility as a starting point; and when the theory is worked out from this point of view most of the familiar features will be recognized in it. (Personally, I question the usefulness of total utility and the "surplus" even here.) Utility is an ethical category, as indeed is illustrated by the most important conventional application of it, in justifying progressive taxation.

With productivity the situation is in a sense reversed. The mistake, as now generally recognized, was in giving it ethical significance. It tells us nothing as to the income which any member of society *ought* to receive. But it does explain the income which individuals actually get, or tend to get, under the system of private property and free competition. And the theory also shows the manner in which any society, even an ethical Utopia, would have to impute income to productive factors in order to organize production intelligently, however it might distribute that income among producers and non-producers. Progress in theory is to be looked for not from repudiating

the past and starting over, but from reorganizing the results in relation to the problems to which they are relevant and carrying the work forward along similar lines.

CARL E. PARRY.—I welcome this opportunity to speak again because I should like to make a few remarks in more informal fashion than seemed possible in my original paper.

It seems to me that differences of opinion on special subjects like the ones we are discussing arise largely out of a general difference of opinion concerning the kind and degree of specialization appropriate to economists. According to men's differing views on this general question they are disposed to see different meanings in the same situation. Thus I have attended the same sessions of this meeting as Professor Fetter but have been struck by a very different aspect of them. The proposition that they seem to me to illustrate is that we find ourselves able to make headway with a concrete question by bringing to bear upon it the counsel of experts of various kinds. Thus two of the best papers on the bituminous coal situation have not been given by economists at all; one of them has come from a professional geologist and the other from a professional engineer. The discussion of this coal question exemplifies the exact point that I have been trying to make; namely, economists are more effective in advancing human welfare when they enter a conference in the capacity of experts without attempting "to play all the bases themselves."

I have observed that none of the speakers has attempted to defend the principle of marginal utility as an instrument for getting at the reasons for the rise and fall of prices, which signifies that my central attack on this principle was not altogether without foundation.

The only contention which has really disturbed me to the extent of "drawing any blood" is the one advanced by Professor Fisher and apparently endorsed by Dr. Knight, that I make a mistake in repudiating the hypothetical method of approach. There must have been something in my paper that sounded more extreme on this point than I intended it to sound, for I have great respect for the use of this method of approach when used in the right way. The method, as I understand it, is that of "successive approximations," used most effectively so far as I know by Ricardo. Of course, as Professor Fisher says, we must cast typical statements in the form: If A is true then B is true. Now I feel perfectly free to use this method and to employ this form of statement. I can say "if" as well as anybody. Thus *if* foreign governments carry out their present intention to borrow large sums in this country, and *if* large corporations execute pending plans for new financing, then the long-time rate of interest will not fall within the next few months to anything like the extent often predicted. This illustration should show how the hypothetical method is properly employed by economists who embrace the catallactic point of view.

Let me add one discriminating comment on the work of the value theorists. They have certainly rendered a great service in attempting to unify the whole science of economics through the application of their general principle; in so doing they have given us a new vision of the possibility of unification. Their own principle, however, has failed to accomplish the unification largely because it has been so full of antiquated ethics and antiquated psychology. What we now have to do is to attack the task of unification

along somewhat different lines. The value theorists failed to accomplish the end in view, not because they failed to make a study on their own account of everything in any way relating to human welfare, including such matters as ethics and psychology, but because of their failure to see exactly what they were about in their own special line, meanwhile keeping in close touch with the work of modern specialists along other lines. In the days of Adam Smith and Ricardo, for instance, there may have been some excuse for economists inventing their own psychology, but that justification exists no longer. Thus the psychology of psychologists in Ricardo's day was what we now know as phrenology, and perhaps Adam Smith had some excuse for inventing that "propensity to barter or exchange" which has given rise to so much ridicule in modern psychological circles. But in this modern day many of us have no such justification, because we are so situated that we can keep in close touch with colleagues whose particular business it is to keep abreast of modern thought in such fields as those of ethics and psychology. It is along lines of such coöperation that I see our ultimate salvation. Social progress calls for general coöperation among specialists in accord with "the round-table principle" and if the economist is to sit at the table he must know more than anybody else about some special and particular phase of the matter in hand. He must be some sort of expert if he is to sit in with other experts, and my belief is that he can qualify in this way by recognizing his special duty with reference to markets and prices. Growing recognition of this necessity will bring us to discard a number of ideas and methods that are already obsolescent although they have not yet ceased to be cherished by recent tradition.

# FEDERAL TAXATION OF INCOME AND PROFITS

By Fred Rogers Fairchild
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Now that the war is over, our attitude with respect to tax legislation is different from that which we occupied when, in the midst of the conflict, the taxes were enacted which are now to be revised. At that time the supreme consideration was to obtain revenue, large revenue and without delay. Administrative efficiency was of prime importance; questions of justice had to take second place. And right here I feel impelled to testify to the skill and good judgment generally shown in the framing of our war tax legislation. The end to be accomplished was accomplished, and, on the whole, with a reasonable approach to equity.

Today our position is different. The task is to criticize and overhaul war taxation, and to put the revenue system on a peace basis of relative permanency. The crisis is past. There is not the need for hurried action. The present revenue is large and, while the government's needs are also large, there is at least no necessity for any sudden increase of revenue. Whatever is done now should therefore be done carefully and deliberately, with the purpose of putting the federal taxes upon such basis of sound principle as is demanded of a permanent revenue system.

If this is our aim, the first step, I believe, is to get down to fundamental principles regarding the taxation of income. For a generation and more the personal income tax has been the backbone of Europe's revenue systems. In the development of income taxation, the United States has lagged behind the rest of the world. Heretofore the reliance of the federal government upon indirect taxation and of the states and municipalities upon property taxes has diverted our attention from the taxation of incomes. We are today just on the threshold of the development of the income tax as the foundation of our revenue system. It is a time when we should guard our steps, in order to avoid mistakes whose effects may be fundamental and far-reaching. Our use of indirect taxes has not been too successful, and our experience with the property tax has been a dismal and notorious failure. We have already made some false steps in the application of the income tax. Let us beware lest ill-considered action at the present time endanger the success of the tax which is without doubt destined to be the center of the American tax system.

I think I need not further emphasize the present necessity of a careful analysis of the nature of income and of its relation to taxation as the first step in tax revision. Practical legislation and administration may not always be able to carry out sound principle in every detail, yet even

in such cases trouble is avoided if there is at least recognition of the discrepancy between principle and practice.

What is income? In my opinion the most satisfactory definition is—the services rendered by capital and by human beings. This definition I think best expresses the nature of income for the purpose of economic analysis. It also agrees as closely as any definition can with the popular understanding of the term. On carrying this concept of income over into the practical field of taxation, I shall not forget that no scientific definition can be followed slavishly in all its practical applications. Administrative considerations will of necessity require departures from the exact scientific principle, but such variations ought to be made intelligently and with the basic principle never lost sight of.

An important exception of this sort confronts us at once in connection with income taxation. In the modern field of business, money income is the prominent thing. To the business man, income ordinarily signifies receipt of money, and it is not surprising that tax legislation has pretty generally thus limited the idea of income. Now it is certain that in any real economic analysis income cannot be restricted to the receipt of money. By no means all of the services of capital and persons are rendered to the recipient in the form of money received. The houseowner who lives in his own house enjoys an income from it no less real and no less in amount than the income received by the owner of a similar house which is rented to a tenant. The money receipts of a farmer furnish a most imperfect account of his real income. Tax legislation generally fails to recognize income which does not appear in the form of money receipts. There have been exceptions. The Wisconsin income tax, for example, undertook to include the rental value of a house occupied by the owner as income. The Civil War income tax recognized the essentially similar positions of the occupier of a rented house and the occupier of his own dwelling, but undertook to secure equality by permitting the deduction of the annual rental value by both. In neither case can it be considered that the result was a success, and the Wisconsin Tax Commission has definitely announced its belief that the attempt was not worth while. Indeed the attempt to include in taxable income services which do not appear as money receipts involves so many uncertainties and such great administrative difficulties that the lawmaker is probably justified in declining as a rule to consider any but money income. Actually most income is today in the form of money receipts. It must not be forgotten, however, that such limitation does involve departure from scientific principle and, as a result, causes discrimination in favor of certain classes, particularly the farmers, who are in effect permitted to deduct living and family expenses from taxable income, a deduction expressly forbidden to all those

whose family and living expenses must be met by money payments. Similarly the citizen who lives in his own house is favored with an allowance for house rent expressly denied to those who pay rent. The time may come, particularly in connection with the extension of state income taxes, when it may be possible to broaden the definition of income so as to take account of these discrepancies. In the present discussion of the federal income tax, however, I think we are justified in adhering practically to money income.

A more important and more troublesome problem is that of applying practically the distinction between income and capital. Income is a service rendered by capital. Increase in the amount or value of capital itself is not income. The distinction between capital and income is not a particularly difficult one in theory. The problems arising from its practical application, on the other hand, are complex in the extreme, and the United States income tax has not succeeded in applying the distinction with any great degree of logic or even of practical success.

On the one hand the distinction is clearly recognized in that gifts and inheritances are regarded not as income, but as an acquisition of or an addition to capital. The law expressly recognizes that these additions to capital will themselves in turn yield income which will later be subject to the tax. The law is here in harmony with economic principle.

But suppose capital is increased, not by sudden additions, but by gradual growth in value. Is this increase income? Certainly not, if I have stated correctly the true character of income. This is a question upon which there has been difference of opinion among economists. The issue was fought out at a previous meeting of this Association under the general topic *Are Savings Income?*[1] I think it is today safe to say that the weight of economic authority supports the theory that mere growth in value of capital is not income. Capital does not render service to its owner by simply growing in size. Presumably it is now capable of yielding a larger service than before, but it is this service which is income, not the increase in the value of the capital. In fact, it is frequently (though not always) this very power to yield larger income which has caused the capital to increase in value.

On the whole, the lawmakers have held fairly well to this principle. If land appreciates in value, the increase is not taxed as income so long as the ownership of the land does not change. If a corporation's assets increase in value or its prospects of future earnings improve, the corresponding rise in the value of its shares is not treated as income to the shareholder so long as the ownership remains the same. This is correct. But the situation changes when capital assets are sold or exchanged. In such event the law regards as income the difference be-

[1] *Publications of the American Economic Association*, vol. IX, No. 1, April, 1908.

tween the value of the article on the date when sold or exchanged and its cost, or, if acquired before March 1, 1913, its value on that date. So long as the owner holds his capital its growth in value is generally not regarded as income, but just as soon as he sells it or exchanges it for other property, he must render an accounting, and show a gain or loss; the gain, if any, is income.

This position is clearly illogical, whatever otherwise may be said for it. If growth of capital value is not income so long as the capital is not disposed of, on what grounds can the increase in value be regarded as income simply because a particular piece of capital is exchanged for another of presumably the same value? The transfer presumably makes no change in the value of the owner's capital. No service is rendered to him by his capital on account of the transfer. To treat growth of capital value as income merely because there is an exchange of capital is inconsistent. That such treatment would be likely in certain cases to lead to great injustice is apparently recognized in the law itself, since an exception is made, applying, however, only to cases where "in connection with the reorganization, merger, or consolidation of a corporation a person receives in place of stock or securities owned by him new stock or securities of no greater aggregate par or face value." In such cases the law prescribes that "no gain or loss shall be deemed to occur from the exchange, and the new stock or securities received shall be treated as taking the place of the stock, securities, or property exchanged." Aside from the reference to "par or face value," which is illogical, this clause of the law represents what I regard as the sound principle to apply to all cases of transfer of capital assets. Why should it be limited to reorganization, merger, and consolidation of corporations? The principle is exactly the same in every case where securities are exchanged for other securities or, indeed, where capital assets of any sort are exchanged for other capital assets. No income is derived on account of the transfer. The presumption is that the value given is the same as the value received, and even if a greater value is received, the result is not income but increase of capital. In this case the gain is of the nature of a gift, and gifts are not regarded as income even in the law.

The matter is perhaps not quite so clear in the case of sales of capital assets. Here the thing received is not another article of capital of the same sort, but money. Yet even here I must confess my inability to find any logical justification for regarding the gain from such sale as income. The owner has simply transferred capital of one form into capital in the form of money. It cannot be said that his capital has yet rendered him a service. It is quite possible that the money will immediately be used in the purchase of other capital assets of the same

general character as those sold. In such case, the owner's capital remains of the same value as before, and it has rendered him no service. But, it may be asked, have we not accepted on practical grounds the legal definition of income as practically money receipts? Should we not say that the owner's capital has rendered him service by bringing in money, and that the money so received is the income? Very good: but if so, it is the entire money proceeds of the sale, not merely the gain, which is income. This would be logical, and there is much to be said for such a construction, if accompanied by the right to offset money expended in the purchase of new capital. To be logical we should either regard the sale of property for money as yielding no income at all, or else we must regard the entire proceeds of the sale as income. I can find no logical ground for regarding as income merely that part of the money proceeds which represents a gain over the cost, or the value on a certain date, of the property sold.

By a somewhat remarkable coincidence, this view has just received support from a decision of Judge Thomas in the United States District Court of Connecticut in the case of Brewster vs. Walsh. The case involved this very point, and the decision, rendered on December 16, 1920, holds "that the appreciation in value of . . . bonds, even though realized by sale, is not income taxable as such." The Court concludes that such appreciation is capital, not income, and that a tax imposed upon it is a direct tax and would have to be apportioned among the states according to population. This decision, if sustained, will of course mean a complete reversal of the situation in this respect. Its influence in bringing our income tax law back to sound fundamental principles will, in my opinion, be second only to that of the decisions of the Supreme Court in the stock dividend cases.

Pending final legal determination of this matter, it may perhaps be a waste of time to discuss a possible compromise. I should, however, like to suggest that, in case this decision should be reversed, the exception which the law now grants for exchange of securities in connection with mergers, etc., should be extended at least to all transfers of property except where there is an actual sale for money or for something so nearly equivalent to money that it can be turned into money without another sale; such for instance, as a promissory note or a book credit. This I recognize is illogical and a purely practical compromise. But it has the advantage of removing the most serious cases of injustice, and it would simplify greatly the administration problem.

Of course nothing in the foregoing is intended to interfere with the present practice of determining income of traders and dealers through comparative inventories of stock in trade. There is no reason why this procedure, developed by accounting practice and fairly satisfactory to

all concerned, should not continue. Difficulty would occasionally arise in distinguishing a dealer from one who was not in the business of buying and selling goods or capital assets, but this is a matter which could without doubt be taken care of satisfactorily.

While our attention is on the distinction between capital and income, our old friend, the stock dividend, deserves at least a passing word of recognition. I have elsewhere[2] tried to show that, whatever our theory of growth of capital value, the stock dividend cannot be included in any logical definition of income. It certainly constitutes no service rendered by capital to its owner. It represents nothing given by the corporation to the stockholder. It consists simply in a bookkeeping change in the liability of the corporation to its stockholders; namely, a transfer from surplus to capital. This is not income. But, it may be argued, does not the stock dividend represent a growth in the value of the capital invested in the corporation? Very probably it does, but this growth did not take place suddenly when the stock dividend was paid. The stock dividend did not cause it. It had been going on gradually, for a longer or shorter period, and was shown by the growth in the corporation's surplus. Growth of capital was there already, before the stock dividend was declared, and would have been just as much present if the stock dividend had never been declared. The law must choose one or the other definition. If it chose to define growth of capital as income, it then need pay no attention to the stock dividend, but must periodically ascertain in every case the actual growth in the value of the capital, whether stock dividends have been declared or not. If, on the other hand, the law supports the economic principle that growth of capital is not income, there is no longer even the superficial justification for regarding the stock dividend as income. Fortunately this matter has been definitely settled by decisions of the United States Supreme Court, in a way which agrees I think not only with economic principle, but also with the underlying theory of our income tax law itself.

I recognize that there may be a perfectly reasonable feeling that growth of capital ought to be taxed. But this is an entirely separate question from whether growth of capital should be treated as income. The fact that inheritances are not subject to the income tax does not mean that we cannot tax inheritances. If growth of capital assets is a proper subject for taxation, there should be a separate tax for that purpose. Such taxes have already been developed in various countries: for example, Germany's *Zuwachssteuer*, which before the war had made considerable progress. Of course, the fact is that such a tax would undoubtedly be considered a direct tax in this country and would so run

[2] *Bulletin of the National Tax Association*, April, 1918, p. 161; June 1918, p. 240; April, 1920, p. 208.

counter to the constitutional requirement of apportionment among the states according to population. This is a legal rather than an economic obstacle, and in my opinion does not justify a strained definition of income in order to evade the constitutional limitation upon direct taxation. The proper remedy is a constitutional amendment. States and municipalities of course are subject to no such restriction.

The most fundamental thing about the income tax is its personal character. If this tax is to serve as the foundation of our revenue system, it is essential that it be kept a strictly personal tax. The great advantage of the income tax is that it, more than any other tax, may be relied on to distribute the burden of government among the citizens in proportion to their ability to pay. No other tax does this so well. But this result can be achieved only so long as the personal character of the income tax is maintained. The practical problem for us here is the relation between the individual income tax and the taxes upon corporations. In the early days of American taxation, when the corporation was just coming into prominence, it was assumed that corporations should be taxed exactly like natural persons, under the same laws and in the same manner. Corporations were simply so many additional persons, to be taxed under existing laws. In the course of time, and a longer time than now seems reasonable, it was discovered that taxing corporations by the same methods as individuals and in addition to individuals was leading to unjust double taxation. The corporation paid taxes on all its property. The stockholder was taxed on his shares. Gradually the injustice of this was realized, and the next step was to tax the corporation, not in addition to, but in lieu of, the individuals who owned its shares. This arrangement had the appearance of justice and simplicity. Instead of taxing each individual shareholder on the value of his shares (representing ownership in the corporation's assets), why not tax the corporation once for all on all its property and exempt its shares in the hands of the stockholders? This was, indeed, a real forward step in the administration of the general property tax. There were, it is true, interstate complications, and the matter of bonds and notes was never satisfactorily cared for. But double taxation was avoided, or at any rate reduced, and a long stride toward administrative certainty was taken.

This experience with the general property tax, reinforced by the example of Great Britain's long and successful use of the principle of stoppage at the source, has doubtless been responsible for the notion that the same relation between the corporation and the individual could be carried over into the income tax. But this is a mistake. The only kind of income tax to which this arrangement could be successfully applied is one in which there is neither personal exemption nor progressive

rates. This is a topic which I have already discussed in an article just published in the AMERICAN ECONOMIC REVIEW for December.[3] Desiring to avoid vain repetitions, let me simply state that in that article I have undertaken to show that under an income tax having personal exemptions and progressive rates (like our own and practically every other modern income tax), it is impossible to tax corporate incomes in lieu of the tax upon the incomes of their shareholders, without doing serious injustice to many stockholders. Yet to a very considerable extent this is exactly what our law does. Corporations pay a 10 per cent tax upon their net income (less excess profits taxes and other credits). Stockholders are not taxed upon dividends so far as the normal tax is concerned.

The result is (1) that many stockholders are taxed, through the corporation, upon income which, on account of the personal exemptions and credits for dependents, would be tax-free if the tax were imposed upon the recipients of dividends instead of upon corporate income; and (2) much income is taxed, through the corporation, at the rate of 10 per cent, which, if taxed to the individuals in the form of dividends, would pay only the lower normal rate of 4 per cent. This is a violation of the spirit of the income tax law. It is not excused, but made more flagrant, by the fact that it does not affect all stockholders. Many stockholders have incomes from sources other than dividends sufficient to allow them the advantage of their statutory credits and of the lower normal rate on the next $4000 of net income. To such persons the law works no hardship. These are the wealthy and the well-to-do. But to those whose other income is not so great there is denied the advantage of the credits and the low normal rate to which the spirit of the law entitles them. These are the widows and orphans, the aged, and those on the lower rungs of the economic ladder.

Since the publication of the article referred to, I have tried to make some estimate of the extent of this injustice. First, as to denial of the personal exemptions and credits for dependents. Every person who receives any income in the form of dividends, and who does not receive net income from other sources equal to the total credits for personal exemption and for dependents to which he is entitled, is denied the benefit of the whole or a part of such credits.

There is no way of calculating the amount of the injustice thus done through the denial of statutory credits. Every taxpayer is entitled to at least a personal exemption of $1000 or $2000, but there is no information available to correlate the receipt of dividends with the amount of income from other sources to which the exemptions may be applied.

However, the statistics published by the Commissioner of Internal

[3] AMERICAN ECONOMIC REVIEW, Dec., 1920, pp. 785-99.

Revenue show that, in the year 1918, a million and a half people having income of $1000-$2000 received $46,000,000 in dividends. Another million and a half, with incomes of $2000-$3000 received $88,000,000 in dividends, while nearly a million others having incomes of $3000-$5000 received $202,000,000 in dividends. It is certain that not all of these persons had income from other sources out of which to take their credits, and that some considerable part of these $336,000,000 of dividends should not have borne a tax. Just how much should have been exempt it is not possible to say.

As to the injustice done through denial of the 4 per cent normal rate, a more satisfactory calculation can be made. Every taxpayer is entitled to the 4 per cent normal rate upon such part of his net income in excess of his credits for personal exemption and dependents and for dividends as does not exceed $4000. The spirit of the law is that the first $4000 of taxable net income (*i.e.*, above the credits for personal exemption and dependents) should be taxed at the 4 per cent normal rate. Dividends are assumed to have already borne their share on account of the 10 per cent tax paid by the corporation upon its net income. If, in lieu of the corporation income tax, dividends were included in the taxable incomes of individuals (for normal tax as well as surtaxes), the 4 per cent normal rate would naturally apply to the first $4000 of net income above the credits for personal exemption and dependents. Today every person who receives any income in the form of dividends, and whose net income from other sources does not exceed his credits for personal exemption and dependents by at least $4000 is denied the benefit, in whole or in part, of the low normal rate on the first $4000 of taxable net income.

The statistics published by the Commissioner of Internal Revenue show the number of taxpayers making returns of incomes from $1000 to $5000. Now since each of these persons was entitled to at least the personal exemption of $1000, none of these persons could have had taxable income of more than $4000, and it is obvious that, under the spirit of the law the entire taxable income of these persons should have paid only the 4 per cent normal rate. These persons, in the year 1918, received in dividends $335,539,672 out of their total net income of $9,394,398,417. Their income from dividends was 3.6 per cent of their total net income. These dividends were paid out of corporate net income taxed at 10 per cent. The tax paid by the corporations with respect to these dividends was $37,282,186. If the corporations had not been taxed on their income and the dividends (not reduced by the income tax on the corporations) had been taxable to the individuals, the tax would have been not more than $14,912,874 (4 per cent of $372,821,858). Actually it would have been considerably less, on ac-

count of the credits of those whose income from other sources was not equal to the credits to which they were entitled. But disregarding entirely the matter of credits, we note a difference of $22,369,312.

This represents the minimum figure of the amount of the injustice done through denial of the 4 per cent normal rate. It is not, perhaps, in the tax language to which we are becoming accustomed, a large amount. Still even the sum of $22,000,000, wrongly taken, is not to be lightly brushed aside, particularly when it is remembered that it falls upon the class of taxpayers least able to bear it. These $22,000,000 were taken from a class of taxpayers numbering 3,946,152. But it must not be hastily assumed that the average of less than six dollars ($5.67) represents the average of the injustice done. The amount thus unfairly taken from this class of taxpayers was not, of course, pro-rated among them. Very many, probably the great majority, of these persons had no income from dividends. The injustice was done, therefore to a much smaller number of persons than 3,946,152, and the average thus taken must have been a distinctly material sum, while the injustice done in individual cases of persons living on small incomes wholly or mainly in the form of dividends was really serious and, I believe, indefensible.

The foregoing calculation has been confined to the taxpayers having incomes not in excess of $5000. The injustice is by no means so confined. For example, 319,356 persons in the $5,000-$10,000 class received, in 1918, $326,000,000 in dividends, being 13 per cent of their income. Many of these persons were undoubtedly denied a part of the advantage of the 4 per cent normal rate on the first $4000 of income above the statutory credits. It is not possible to calculate the amount of this injustice. But it is safe to say that the injustice done here must add very materially to that which has been calculated for the lower income classes. The aggregate result is too serious a matter to be regarded lightly.

The remedy is perfectly simple: give up the income tax on corporations and include dividends in the incomes of individuals for the normal tax as well as the surtaxes. This does away entirely with the injustice. It assures to each individual the credits to which he is entitled and the advantage of the lower normal rate so far as he is entitled to it.

This proposition has other advantages. May I quote the following paragraph from my article in the December REVIEW:

> This proposition has many other advantages, of which space permits only the mention. It makes the income tax a strictly personal tax. It does away with the false idea of tax-free investments. The taxpayer knows he is taxed. This is good for the taxpayer. It is also good for the state of public opinion, since it removes the public irritation caused by the spectacle of large classes of income exempt (supposedly) from taxation. It brings home

to the individual his direct interest in economy of government expenditure and his responsibility for the conduct of government finances. The same arguments apply, of course, to the taxation of interest on bonds. The mistakes already made as to the tax-free covenant should be avoided in future.

Again this change would make corporate stocks a more attractive investment for persons of modest incomes and for estates and trusts held in the interest of such persons. Relief from the income tax would ultimately enable corporations to pay higher dividends, which in the hands of the stockholder would enjoy the benefit of the personal exemption.

It is not the purpose of this essay to examine current plans for a general overhauling of the federal revenue system. But it is necessary to recognize the fact that if the excess profits tax should be repealed (as now seems to be quite commonly assumed), the proposition to give up the corporate income tax would have to be accompanied by some tax upon the undistributed income of corporations. Otherwise owners of incorporated businesses would have an unwarranted advantage over partnerships and sole proprietors, since the latter are taxable, under the individual income tax, upon all their earnings, whether distributed or not.

It is true that equality might be obtained in the opposite way: *i.e.*, by exempting the undistributed income of partnerships and individuals. I must confess to a strong leaning toward such an arrangement, on the principle that earnings left in the business are really not income and should, in theory at least, not be subject to an income tax. This is a topic which I should have liked to discuss in this essay had time permitted. However, as a practical proposition, the exemption of undistributed earnings of partnerships and individuals is not likely to be seriously considered in the forthcoming tax revision. In case of the repeal of the excess profits tax, therefore, the proposition to give up the corporate income tax must include a tax upon the undistributed income of corporations.

The fundamental principles of such a tax are developed in my article in the December REVIEW to which I have already had to refer. To summarize briefly here:

The purpose of the tax on corporate undistributed income should be to equalize between corporate investors and partnerships and individuals, and to prevent deferring dividends for the sake of avoiding taxation; its purpose should not be to force distribution or to penalize the putting of earnings back into the business.

The rate of the tax on undistributed income may be determined in various ways. A flat rate on all such earnings would be the simplest. The plan which I have favored consists of a double progression, based upon (1) the amount of the corporation's invested capital, and (2) the ratio of undistributed earnings to capital, the rates ranging from say,

10 per cent, the lowest, to a maximum of 50 per cent. The following scheme of rates is offered as a suggestion:

| Invested capital | Ratio of undistributed earnings to invested capital (%) | | | | |
|---|---|---|---|---|---|
| | Over — Not over 10 | 10 30 | 30 50 | 50 75 | 75 — |
| Not in excess of $100,000 ..... | 10 | 15 | 20 | 25 | 30 |
| Over $100,000 and not over $1,000,000 ..... | 10 | 20 | 30 | 40 | 50 |
| Over $1,000,000 and not over $10,000,000 ..... | 10 | 25 | 40 | 50 | 50 |
| Over $10,000,000... | 10 | 30 | 50 | 50 | 50 |

In order to avoid injustice to the small close or family corporation, a small fixed amount of undistributed income, say the first $5000, should be taxable at a lower rate, i.e., the lowest or normal rate of the individual income tax. Or, as an alternative to this, the law might permit any corporation to elect to be treated like a partnership. This would require simply the calculation of each stockholder's distributive share of the corporation's net income, which share (whether distributed or not) would then be taxed to the stockholder as personal income. The corporation would be untaxed. This option, when accepted, would give absolute equality between such stockholders and individuals and partners.

I realize that objection will at once be raised to this scheme of progressive rates on undistributed income, on the ground that it would perpetuate the determination of "invested capital," generally considered one of the most troublesome features of the excss profits tax. May I, in answer, quote again briefly from my REVIEW article:

> That the legal determination of invested capital is complicated and annoying cannot be denied. That it should now be given up is not so certain. The worst stage has been passed. Putting the new device into operation, in the midst of the disturbances incident to war, was a tremendous task. Continuing its operation in time of peace is a matter of less and steadily diminishing difficulty. It is at least open to question whether the progress already made should now be given up. If the most equitable taxation of corporations should seem to require the determination of invested capital, it is reasonable to suggest that the advantage gained may fully compensate for the admitted objections on the administrative side.

The next few months will almost certainly witness important changes in the federal revenue system. It is to be hoped that these changes may establish as the foundation of the American revenue system an improved income tax, based upon sound economic principles as regards the nature of taxable income and the essentially personal character of the income tax.

## FEDERAL TAXATION OF INCOME AND PROFITS—DISCUSSION

Professor Robert Murray Haig, of Columbia University, dissented from the definition of income suggested in the paper presented by Professor Fairchild, on the ground that it was so narrowly conceived as to involve numerous serious economic anomalies. He favored a broad definition of income roughly equivalent to the accountant's definition of net profits. A full statement of his views may be found in the *Columbia University Lectures—The Federal Income Tax* (Columbia University Press, 1921) pp. 1-28.

H. M. Stein.—In regard to the general principles which have been discussed by the previous speakers, I find myself substantially in agreement with Professors Haig and Friday. In my judgment, the income tax should be burdened not merely upon those who receive income in a technical, economic sense, but in accordance with the broader principle of ability to pay. Whether or not, from an economic standpoint, profit upon the conversion or sale of capital assets is income, the income tax should attach if the Congress has the power to make the levy.

Of course, if the recent decision of the Connecticut Court is substantiated by the Supreme Court, the Congress (in the absence of a constitutional amendment) will be without power to tax capital gains, except in the case of traders in capital assets. It seems unlikely, though, that the highest court will adopt such a view, because its last important income tax decision (Maccomber case) may be said to indicate its views. The court defined income as the fruit of capital and labor, including profit upon the sale of capital assets. Again, in referring to the non-taxability of stock dividends, it said that upon the sale of stock received as a dividend a profit might be realized, which would be taxable. Of course, these statements were dicta, but it is quite reasonable to suppose that the same view will be adopted when the definite issue comes before the court.

In one respect I am in accord with the views expressed by Professor Fairchild. Under the recent rulings of the Treasury Department, mere incorporation by a sole trader or by a partnership, without sale or change of beneficial interest, is held to produce taxable income. This is, perhaps, a rigid view, even under the present law, but if it is a necessary ruling the law should certainly be changed. Where individuals receive for their assets merely other evidences (*i.e.*, stock, of substantially the same interest in the same assets, the law ought not to regard the transaction as closed, or as resulting in profit or loss.

There is another provision relating to the profit upon sale of capital assets which, in my opinion, should be amended. At the present time, if assets are sold or exchanged, the entire profit is taxable as income of the year in which the sale takes place, at the very high present tax rates, notwithstanding that the increase in value (profit) may have accumulated over a period of years. The effect of this provision is to hamper normal business transactions, since in many prospective sales the question of resultant taxation is given almost controlling consideration. The law should be amended so as to permit the profit to be spread over the period of years during which the property was held, and the profit for each year taxed at the rates which governed in that year. This was done, under the 1917 law, in respect to

dividends paid out of the earnings of then prior years. It may be that the procedure would be cumbersome, but it would be much fairer to taxpayers, and would react beneficially upon business transactions, and, indirectly, upon the revenue. It might be, perhaps, that in order to save administrative problems a flat rate could be imposed on such profits, depending upon the number of years the property had been held. In other words, the Congress might arrive at a rough equation of the percentage of tax, in respect to property sold at a profit in 1921, or subsequent years, attach one equated surtax rate if it had been held since 1913 and another rate if held since 1914, etc.

Another important suggestion might be stressed at this time, when amendments to the revenue law are being considered generally. That is, the great need for a "net loss" provision. Congress allowed the losses of 1919, if any, to be applied against the profits of 1918, so as to reduce the tax for 1918; also such losses could be carried forward, if the 1918 profits did not absorb them. Such a provision might well be made permanent, but it should, in any event, be adopted for 1920. It was enacted for 1919 on the theory that 1918 profits would be unreal if in the expected price decline of 1919 losses were incurred. As we all know, the decline did not come in 1919, but did arrive in 1920. As a matter of justice to business, and in order to avoid having the government, in many cases, collect in income tax more than the income of the two years together, the net loss provision should be retroactively enacted for 1920. In this connection, it is somewhat surprising that corporations and business men, in general, favor the abolition of the excess profits tax, and in substitution therefor either higher corporation income taxes or an undistributed profits tax. It would seem that the business situation does not justify solidarity of this kind. Corporations which are unprofitable, or only moderately profitable, might well be in favor of the excess profits tax, which would burden more profitable enterprises, rather than consent to a higher tax upon their own very moderate profits, or to a sales or turn-over tax, which they might not be able to pass on to the consumer.

Professor Fairchild's suggestion as to the injustice of denying to stockholders with small incomes the full benefit of the normal tax paid by corporations upon net income distributed as dividends, raises an interesting problem. First of all, the burden is not upon the individual, but upon the corporation, since it is the latter which pays a normal tax upon income that would not be taxable or would be taxed at a lower rate, if only the ultimate recipient were obliged to account for it. If a change were made, such as Professor Fairchild advocates, the result would be to affect seriously the relations of preferred and common stockholders. Up to the present time, the corporation has paid the normal tax, and dividends have been exempt therefrom. In connection with the preferred stock issues of the last few years, the corporations have impressed that fact upon investors, and have presumably received a price for their stock which reflects the value of the exemption. If preferred dividends were now made subject to normal tax in the hands of the holder, it would be a benefit to the corporation, *i.e.*, to the common stockholder as residuary owner, and preferred stocks would presumably decline in value, perhaps 5 to 10 per cent. There does not seem to be any justification for having the government shift the burden away from those who have agreed to assume it. There is no question here of the gov-

ernment raising revenue. It is merely a question of whether the government shall continue a policy under which A pays what he has agreed to pay, or shall change it so that B is obliged to take up A's burden. In this connection it should be stated that when withholding against residents was discontinued, the provision for withholding 2 per cent, in the case of tax-free covenant bonds, was inserted in the law, in order to protect the contractual rights of bondholders. Up to 1916, the maximum normal rate had been 2 per cent, and Congress no doubt considered that practically all contracts made were upon the understanding of a normal tax rate not exceeding 2 per cent. Therefore, when the normal tax was raised and general withholding abolished, withholding at 2 per cent on tax-free covenant bonds constituted substantially adequate protection to the bondholders. If a change were now made in respect to the normal tax on dividends, it would seem that similar considerations should govern.

GEORGE O. MAY.—I am very glad of an opportunity of speaking here, though I speak not as an economist but as an accountant. I have been greatly interested in Professor Fairchild's paper, but I find myself perhaps more closely in agreement with the views of Professor Haig than with those of Professor Fairchild.

In distinguishing between capital and income I think it is very desirable to deal separately with two elements that may contribute to an increase or decrease of capital as expressed in terms of money. One element is the increase or decrease inherent in the nature of the capital asset (to use the accountant's term); the other is the fluctuation in value of the capital asset due to changing price levels. Speaking as an accountant I would say that any increase or decrease of capital due to inherent causes must be taken into account in determining income. Theoretically I should not regard any increase or decrease in the money value of capital assets, due to a general rise or fall in price level, as being in the nature of income. It may be, however, that as a practical problem the difficulties of separating the two may make it expedient to treat them on the same basis, and in that case I should prefer to meet the situation by extending the definition of income to cover both elements, rather than to narrow it so as to exclude both. It seems to me that accepting the definition of income as the services of capital, the creation of additional capital must properly be regarded as such a service, and, conversely, the exhaustion of capital as a corresponding disservice. While dealing with this point I should like to draw attention to the confusion of thought which frequently arises in business and accounting circles, and possibly in economic circles, from the use of the words "depreciation" and "appreciation" without regard to their elements. The increase in the value of a reversion as its maturity approaches, or the decrease in the value of an annuity as its term becomes exhausted, is entirely different in its nature from the increases and the decreases in the value of reversions and annuities resulting from changes in interest rates. Much unsound accounting and unsound finance has been based on a failure to recognize the difference, the commonest case being where unrealized, unrealizable, and perhaps purely temporary appreciation of, say, land has been treated as offsetting the depreciation of physical plant resulting from the actual exhaustion of its useful life.

In regard to Professor Fairchild's proposal to tax earnings of corpora-

tions to the individual stockholders, as and when dividends are declared, and not to the corporations, I think in theory there is much to be said for it. In speaking of the undivided profits tax, Professor Fairchild refers to it as being necessary as a practical proposition, and I think it is as a practical proposition that the proposal to refrain from taxing corporation profits as such falls to the ground. I might in passing refer to the injustice which Professor Fairchild mentions as arising from the taxation at 10 per cent of corporation profits which accrue ultimately to stockholders who should properly be taxed at only 4 per cent. This injustice, if it be one, could be remedied very simply, as all that would be necessary would be for the stockholder to return his dividends as income and deduct from his tax an amount equal to the corporation income tax on the amount of dividends included in his gross income. I was in the Treasury when the present tax law was passed and I think some at least of those who supported the bill regarded the discrimination of which Professor Fairchild complains as a step, a halting step perhaps, in the direction of preferential treatment for earned income as against invested income.

I was interested to see what definite proposals Professor Fairchild would make in respect to the undistributed profits tax, and particularly how he would meet, first, the problem of assessing his tax so as not to discourage legitimate retention of profits in business, but to penalize retentions for the purpose of avoiding surtaxes on shareholders; and, secondly, the difficulty of avoiding the same injustice to small stockholders of which he complains as resulting from taxation at 10 per cent of corporation profits which accrue to a shareholder properly tax free or taxable only at 4 per cent. I found, however, that his proposals did not meet either difficulty: to do so it seems to me that the form of the tax would have to take into account the character of the business and the taxable status of the stockholders. There are a great many companies which have a large part of their investment in the form of wasting assets, such as mines or timberlands, which are in a position to distribute all their earnings in dividends. On the other hand, a new company building up a new business may require to retain all its profits in the business in order even to survive. In these circumstances, to adopt either the amount already invested or a percentage of the total net income or surplus as the basis for exemption or graduation fails altogether to do justice.

The second point is perhaps of even greater importance. In many of the great public companies, with such a tax in existence, there would be on the one side a large body of small stockholders with relatively small incomes whose interest would lie in the distribution of profits and the avoidance of the undistributed tax even if it were necessary to reinvest the amounts distributed as additional capital. On the other side would be the stockholders subject to heavy surtaxes, whose interests would be best served by the retention of the profits in the business even at the cost of the undistributed profits tax. There would thus be a direct conflict of interests between the different classes of stockholders. As a general rule the large stockholders would be those principally represented in the board of directors, and the probabilities are that the small stockholders would suffer in many cases for the benefit of the large stockholders.

I might mention one other point in connection with an undistributed profits tax. The methods which determine taxable net income are not nec-

essarily those which determine the income which a company can properly and legally distribute as dividends. You cannot measure taxable undivided profits by comparing taxable net income with dividends paid, without doing grave injustice in many cases, though the acceptance of the "cost or market" rule for valuation of inventories has greatly reduced the number of such cases. Consequently the adoption of the undistributed tax would involve new complexities in returns and administration or, as an alternative, new injustice.

It may be that an undivided profits tax is inevitable and that it would do less injury than the alternatives which might be suggested as substitutes for it, but I think we must realize that it is impossible to apply it without producing serious inequities and other highly undesirable consequences.

JOHN WHYTE.—Independently of Professor Fairchild, the Committee on Federal Taxation of the National Association of Credit Men has come to very similar conclusions. This Committee advocates the elimination of the Excess Profits Tax and the elimination of the Corporation Income Tax. It proposes then that dividends from current earnings of corporations be subject to the normal tax in the hands of the individual. It proposes, further, a tax on the current year's earnings of corporations, not distributed,—this tax to be at a graduated rate. These proposals are identical with those made by Professor Fairchild.

The Committee diverges from Professor Fairchild's recommendations in that it discards entirely the valuation of assets as a method of basing the tax on undistributed corporate earnings. The reason for rejecting this method of basing and applying the tax is to be found in the difficulty of defining and determining invested capital.

The purpose of this tax on undistributed earnings is to achieve equalization. The tax is to be so framed as to have the following result:

The tax on the undistributed earnings of a corporation plus the tax on distributed earnings of a corporation (this last tax to be paid by individual shareholders) should approximate the total tax that would be paid by individual shareholders if the earnings of the corporation were all distributed.

To achieve this approximation a graduated rate must be used. The reason for this graduated rate is, of course, the fact that individual shareholders pay taxes under the progressive income tax and pay, therefore, at a graduated rate. If, for example, a large percentage of the earnings of a corporation are distributed, these earnings will be subject to a relatively higher rate of tax under the progressive income tax than would a smaller distribution of the earnings of the same corporation. As a general rule, the greater the distribution the higher will be the rates to which that distribution (in the hands of the individual shareholders) is subject under the progressive income tax. To compensate for the relatively high rates that apply on a large percentage of distributed earnings, the rate on the *small percentage* of *undistributed earnings* should be low. If, on the contrary, the percentage of distributed earnings is low and thus presumably subject to lower brackets under the individual income tax, the rate on the *large* percentage of *undistributed earnings* should be compensatingly higher. The following formula may express the situation more clearly:

Tax on distributed earnings of corporation plus tax on undistributed earnings equals roughly the tax on total distributed earnings of same corporation.

I quote here from the Report of the Committee:

A Tax on Undistributed Earnings Based of the Percentage Undistributed

The Committee feels, giving weight to both the considerations of equity and simplicity, that the most desirable factor on which to base this undistributed earnings tax would be the percentage of the total current net income which remains undistributed, and considers this factor as being of the greatest importance in seeking equality as between different individuals who prosper equally.

To illustrate, taking the case of an individual who has a $40,000 share in the current income of a corporation. If the corporation were to distribute 25 per cent of its current net income in dividends, this individual would pay an individual income tax on $10,000. If the corporation were to distribute 75 per cent of its net income, this shareholder would pay individual income tax on $30,000, and on the difference of $20,000 received under the last example he would be paying a gradually increasing rate.

The tax on undistributed earnings is recommended for the purpose of equalizing, as far as possible, the tax borne by this man when the corporation distributes but 25 per cent, and pays on his behalf taxes on the 75 per cent remaining. It is obvious, since the individual would pay at a gradually increasing rate, if he pays his own taxes, that when the corporation pays his tax for him (by paying a tax on earnings undistributed to him) the rates should be such as to be in a measure comparable. The rates should aim to produce the proper revenue but not at a sacrifice of substantial equality.

The recommendation therefore is that the application of the undistributed earnings tax be based on the percentage of the total net income which remains undistributed and therefore free from income tax in the hands of the individual.

Rates

This tax on undistributed earnings, being in lieu of taxes which would be paid on similar income by an individual receiving such income from a source other than corporate investment, should in its lowest bracket be equal to the lowest bracket of the individual income tax (4 per cent under the present law). The fixing of its highest bracket should be governed by two considerations: (1) the greatest measure of equity to the shareholders as compared with other individuals; and (2) productivity from a revenue standpoint.

The Secretary of the Treasury, the Honorable David F. Houston, in his annual report dated Nov. 30, 1920, suggests that the rates of surtax on that part of the net income which is saved and reinvested in business be reduced by one-fifth and in no instance exceed 20 per cent.

The recommendation heretofore made provides that the individual shareholder should pay his own normal tax. Should that be enacted into law, it would mean that the maximum rate of this proposed undistributed earnings tax would be 28 per cent; namely, the equalizing 8 per cent normal tax, plus 20 per cent maximum surtax which would be the tax maximum paid by the individual if the earnings were distributed to him and reinvested in securities the income of which is subject to tax. Therefore, we give for purposes of illustration, a tentative basis on which we may erect a schedule of rates. The making of rates, however, being a function of Congress, this Committee does not presume to suggest what the rates should be, but above they have endeavored to set out the best thought on the subject and the following tabulation is submitted for the sole purpose of illustrating the manner in which whatever rates might be determined on would be applied.

With the foregoing in mind, the rates might, for example, be as in the following table. For the sake of simplicity in figures, the example is based on a corporation with a net income of $100,000, making no distribution. The undistributed earnings tax in this case would be as follows:

| | | Tax Rate | Amount of Tax | Cumulative Total |
|---|---|---|---|---|
| On the first 10% of the total net income which remains undistributed | $10,000 | 4% | $400.00 | $400.00 |
| On the next 10% | 10,000 | 8% | 800.00 | 1,200.00 |
| On the next 10% | 10,000 | 12% | 1,200.00 | 2,400.00 |
| On the next 10% | 10,000 | 16% | 1,600.00 | 4,000.00 |
| On the next 10% | 10,000 | 20% | 2,000.00 | 6,000.00 |
| On the next 10% | 10,000 | 24% | 2,400.00 | 8,400.00 |
| All over 60% | 40,000 | 28% | 11,200.00 | 19,600.00 |

The rates might be subjected to either more or less graduation than shown above, as the graduations above were made few and simple for the purpose of clarity. Also, the point at which the maximum rate is made to apply might be shifted either up or down as necessities seemed to warrant.

THE UNDISTRIBUTED EARNINGS TAX WILL NOT FORCE UNDUE DISTRIBUTION

The only argument which has been brought forward against the tax on undistributed earnings is that it would force distribution to shareholders of earnings which were needed in the business, this distribution being forced to avoid payment of the undistributed earnings tax by the corporation. This argument is fallacious for the following reasons:

Corporations are managed by boards of directors, which control payment of dividends by the corporation. The personnel of boards of directors is almost invariably made up of the principal owners or their representatives.

If the above mentioned argument were sound, we should have to conclude that a board of directors would pay themselves dividends on which they would be obliged to pay a personal income tax in order to avoid bearing their share of a comparable tax assessed against the corporation, and that they would pay themselves these dividends and in so doing undermine the security of their investment in the corporation.

It does not seem to this Committee that any such accusation of intellectual weakness is justified against the owners of the corporations of the country.

It seems to the Committee that those corporations which are well managed and which are earning income, and therefore are the ones to which this tax would apply, are competent to manage their affairs, and will not undermine the security of their investment for the purpose of exempting the corporation from tax and according themselves the privilege of paying a comparable tax on such income.

Such a tax would not in any way restrict expansion commensurate with the legitimate requirements of the business, although it might act as a deterrent to any abnormal expansion which the Committee believes should be financed through new securities, thus obtaining the consent of all the shareholders to the program.

The Secretary of the Treasury in his report just recently issued, has suggested an additional tax of 6 per cent on corporate incomes.

Your committee believes that there is no sound reason why there should be any tax paid by corporations on the income which they distribute. Many eminent legal minds, including the members of the Supreme Court of the United States, have stated that a corporation is merely an aggregation of individuals; and your Committee, believing as it does in the principles of taxation of income on the basis of ability to pay, and believing that every individual of the country should be permitted to pay his own tax, can see no reason why any tax should be paid by the corporation against that part of the income which is distributed to the shareholder and therefore can be equitably taxed in his possession. Any flat tax on corporations deprives the small shareholder not only of the personal exemption the law accords him, but also deprives him of the benefit of the lower rate on the first $4000 over his exemption.

It seems to your Committee that there is no reason why a corporation as such should pay any federal tax which is not in like manner assessed against a partnership or an individual conducting an identical institution.

The present tax law is collecting in the neighborhood of $100,000,000 from the corporations of the country under the capital stock tax for the privilege of doing business in corporate form. If the federal government is to levy any tax on the privilege of doing business in corporate form, then it would seem that such a tax as the capital stock is the fairest measure possible under the Constitution.

The corporation income tax has been generally considered as paid in behalf of the shareholders in lieu of the normal tax, and dividends have accordingly been made exempt from the normal tax. Under this plan, the corporation income tax and the individual normal tax should be at the same rate.

The recent report of the Secretary of the Treasury suggests a still wider spread between the flat individual normal rate and the corporation income tax rate. If this extra rate on corporate income is designed to be a tax on the privilege of doing business in corporate form, it is fundamentally wrong. At first glance it seems to be founded with only one idea in mind: to get the money.

Any tax on the total net income of corporations designed to equalize the taxes paid by partners or sole traders on the undistributed earnings of their business should not be considered for the reasons that we have pointed out elsewhere.

THE ADVANTAGES OF THE UNDISTRIBUTED EARNINGS TAX

In so far as it is practicable the undistributed earnings tax will equalize taxation.

1. It will thus be closed to the serious objection which is directed against the excess profits tax and may be directed against some of the substitutes proposed for it.
2. Since it is an extension of the income tax principle, it does not require the setting up of new tax machinery.
3. It combines with the income tax flexibility of rate.
4. By removing the penalty that rests on small shareholders, it will encourage the investment on the part of larger groups in shares of corporations and thus contribute to the financial and economic stability of the country.

PROFESSOR FAIRCHILD.—The discussion this morning has brought out one conflict of opinion which is fundamental. This has to do with the theoretical definition of income and the distinction between income and capital. It was not my intention in this paper to bring up again any lengthy discussion of this old question. As I have already stated, this is a point upon which there has been difference of opinion among economists, and although the matter was discussed at length at the annual meeting of this Association in 1908, it is not surprising to find that difference still persists. I was not myself present at that meeting, but my reading of the PROCEEDINGS has led me to the impression that the advocates of the definition of income which I have used this morning had decidedly the better of the argument, and I am still of that opinion. For the purpose of the problem before us today we must simply recognize that a difference of opinion exists among economists as to the theoretical definition of income.

Now when we come to the practical problem before us this morning—namely, how to carry over into the field of the income tax our economic concept of income, it should of course be obvious to everyone that no theoretical concept can be applied exactly without numerous inconsistencies and difficulties necessitating as a practical matter many qualifications and adjustments. This result will come no matter what theoretical definition we take as the starting point. That definition will be most useful in the practical problem which in the long run causes the least of such difficulties and necessitates the fewest adjustments. From this standpoint I am decidedly of the opinion that the definition of income which I have used has the advantage over that definition which would include increases in capital value as income.

Professor Haig in particular has pointed out difficulties which would follow the application of my definition. In this he has been generous. He might easily have added to his list. In my study of this matter the difficulties which he mentions and many others have been foreseen. They may generally be overcome without meeting any insuperable obstacle. But suppose we turn to the definition which he proposes. We are then immediately confronted with an overwhelming swarm of difficulties, to a very few of which I should like to call attention.

1. Gifts and inheritances should logically be included in income, with practical results which are not pleasing to contemplate.

2. Capital frequently increases in value merely on account of the depreciation of the currency standard. To consider such increase as income is fundamentally unjust and, in extreme cases, ruinous. Complaints and petitions for relief have come in great volume from the business world on account of the injustice done by counting as income appreciation

in value of assets even in cases of annual inventories, where the matter is far less serious than when it has to do with revaluing permanent capital assets. Professor Haig has suggested that this difficulty is to be met by the application of an index number correction. Others have thrown doubt upon the usefulness of this device. Personally I hope the time may come when we shall have devised some arrangement to correct the fluctuations of our monetary standard, but at best this is in the more or less distant future. What we are considering today is a present practical problem.

3. To bring out clearly the simple principle, take A who owns a forest whose value on account of the growth of the timber is increasing at the rate of $1000 a year. B receives an income of $1000 a year from salary, interest, or dividends. According to Professor Haig's definition of income, these two men are in the same situation and should be taxed alike. The fact is, they are not at all in the same situation. A during the time his forest is growing to merchantable size receives no service from it. It yields no income, yet he is compelled to pay an annual tax, to meet which his capital furnishes him no funds. Suppose after twenty years, before any timber is cut, the forest is destroyed by fire. A has received no income under my definition. He has certainly realized nothing from the forest, and his position is the *reductio ad absurdum* of that definition which includes as income increase in value of capital assets. It is true that he could now be allowed to deduct his loss, but this he can do only to the extent to which he has income from other sources from which to make the deduction. He is granted no return of the tax paid in respect to income never received. This is an extreme case. But other cases of injustice differ from it only in degree, on account of the shorter term for which the investment runs before yielding a return. Treating as income the gain from sales of more or less long time investment has produced innumerable cases of injustice under the present law.

4. A serious objection to regarding increase in capital value as income has been brought out by Professor Haig, namely, the injustice which results from taxing large gains irregularly received, under an income tax with a variable rate. Professor Haig thinks this consideration must lead us to abandon the variable rate, yet the variable rate itself is one of the best features of the income tax. Great Britain has always regarded the income tax as the elastic element in her revenue system, although in recent years her income tax has been strained to the limit of elasticity. It is by means of the variable rate that the income tax is to be used to balance the budget and to bring home to the taxpayers the results of legislative economy or extravagance. This in my opinion is one of the most fundamental advantages of the income tax. It is this which gives some hope that the income tax may be the instrument to lead us out of the wilderness of congressional extravagance. Expenses must be met, and taxation is the only ultimate way to meet them. Our only possible safety lies in bringing home to the minds of the people the fact that they must bear the burdens of legislative expenditures. Herein lies the one good feature of the American general property tax. Every year the selectmen or other local officers must figure up the tax rate. Its public announcement evidences the burden which every taxpayer must bear on account of town expenditures, and the taxpayer is thereby made to realize the advantage of economy. It is fervently to be hoped that the federal income tax, with a rate changing from time to

time, may thus serve a beneficent purpose in checking congressional extravagance. All this we sacrifice if the rate must be fixed with relative permanency.

I have laid myself open to attack through introducing for discussion this morning, by brief reference only, certain topics which there has not been time to discuss in full. For example, Mr. May has criticized the proposed tax on undistributed earnings on the ground that it would bear too heavily upon newly organized corporations which are just getting on their feet and which for some time need to turn back most or all of their earnings into the business. If Mr. May had had before him my article in the December REVIEW he would have found this matter foreseen and provided for by means of the graduated rate based on size of invested capital as well as the special provision for small corporations.

Mr. May has likewise failed to grasp fully the argument in favor of substituting the individual taxation of dividends in place of the corporate income tax. If he had read my article in the December REVIEW I think he would not have made the proposition that to remedy the injustice to which I refer "all that would be necessary would be for the stockholder to return his dividends as income and deduct from his tax an amount equal to the corporation income tax on the amount of dividends included in his gross income." The main point of my criticism of the present system was that all corporate income is taxed at 10 per cent, whereas if the tax were upon the individual, income received from corporate investment would be taxed either 8 per cent, 4 per cent, or not at all, according to the circumstances of the individual taxpayer. Mr. May's device fails to meet this difficulty, since he would still leave all corporate income taxable at 10 per cent.

To illustrate by a single example, suppose A owns $50,000 worth of stock in a corporation of $1,000,000 capital. The corporation's net income is $80,000, of which A's share is $4000. The corporation is taxed 10 per cent on its net income less $2000, or $7800, which reduces A's share by $390, and makes his dividend $3610. Assuming that he is entitled to a personal exemption of $2000, and has no other income, his income tax would be $64.40, leaving a net income of $3545.60. If the deduction which Mr. May suggests is to be granted only to the extent of his tax, he will, it is true, be relieved of the entire tax of $64.40, but it is obvious that this goes only a short way toward remedying the injustice done him. This could be done only if the government actually gave him a rebate of the full $390 which the corporation paid in tax upon his share of its income. This I take it Mr. May does not propose. His proposition does indeed to some extent reduce the injustice of the present method, and to that extent should be welcomed if nothing better can be secured.

Furthermore, Mr. May's suggestion fails entirely to meet another important reason for advocating the individual taxation of dividends. I refer to the psychological effect upon the taxpayer of feeling that governmental expenditure comes back upon him in the form of heavy income taxation. Mr. May's device would still leave the ordinary taxpayer with the comfortable feeling that it made no difference to him how heavily the corporations were taxed.

The question has been raised whether my definition of income, carried to its logical limit, does not mean the exemption of savings and amount virtually to a tax on consumption. In my original remarks I expressly stated

that it was not my intention to press the definition to this limit in its practical application. As a matter of theory, it is quite possible to carry the definition to this logical conclusion, and much is to be said in its favor. Since, however, we are dealing with the practical problem of the revision of the American income tax, and since I admit that there is at present not even a slight possibility of a general exemption of savings, this matter appeared to be of theoretical interest only, and on this ground I expressly refrained from going into it. It is a matter which I hope to examine at some future time.

Mr. Stein has objected to making the income tax a purely personal tax on the ground that dividends from preferred stock would thus become taxable, with a corresponding depreciation in the value of such stock. This I should regard as rather a backhanded argument. As a matter of fact the peculiar position of preferred stock is one of the strongest arguments for doing exactly what I proposed. Under the present tax system, dividends on preferred stock are absolutely untaxed so far as the normal tax is concerned. The tax on corporate net income is supposed to be in lieu of the normal tax on dividends, but it affects only the dividends on common stock. The corporate income tax falls entirely upon the common stock. Whatever its amount, there is no reduction from the dividends to preferred stockholders, until the corporation's earnings are reduced below the amount of the dividends due to preferred stockholders. This is one of the anomalies of the present system. It disappears under the plan I have proposed. That correction of an anomalous situation will involve readjustments is scarcely an argument against making the change.

In applying scientific principles to practical problems, we must all contribute what help we may. The function of the economist, I take it, is to present fundamental principles and see that they are carried out in practice so far as the demands of the particular case permit. The accountant, on the other hand, starts from the other end. His attention is primarily on the practical problem to be solved, and he is inclined to form his definitions and state his principles with a view to the immediate necessities of the particular case. It is the business of the economist to take a long range view and to insist that whatever is done to meet the present problem be not superficial and in violation of sound principles, lest the stage be set for future trouble. Both points of view are essential to the solution of such a problem as that of framing a national tax system.

## THE TEACHING OF ELEMENTARY ECONOMICS

### Round Table Conference

The conference Wednesday afternoon, December 29, was largely attended by an interested gathering. At that session remarks were contributed only by announced speakers. At the smaller adjourned meeting next day, there was a prepared contribution and brief general discussion as well. The view was expressed after the conference that the subject had been only opened up, and that the conference should be continued another year. The following is an epitome of the stenographic minutes, prepared by the Chairman, D. T. Clark, Williams College.

Professor Burbank, Harvard, answering the question raised by the Chairman, why the teaching of economics has had so little influence upon public life, said that the main reason was because the teaching in general is pretty poor, and that it is pretty poor because we have not defined our aims. Too frequently we undertake to give a course in economics by choosing a text-book, and perhaps a book of selected readings, and by then simply attempting to cover the book and the readings, with no aim beyond that.

The aim should be two-fold, to give both a rigid training in theory and a comprehensive survey of fact. The time-honored aims are not to be put upon the shelf; the first subject which was emphasized when economics became a subject for collegiate study was disciplinary in character; the elementary course should give definite training that will lead to independent, logical reasoning regarding economic phenomena. But our aims should go beyond that; we should aim also to give our students a clear survey, as nearly as possible, of the existing economic organization. The course should be not only disciplinary in character, but factual as well, and at its end the student should be able to handle economic phenomena without prejudice, and have a clear and comprehensive view of the existing economic system. Clearly to establish this aim and then to attempt to accomplish it would raise our standard of teaching very much, and give our students far more than they are getting.

This cannot be done in a half-course. The half-course is perhaps a waste of the money of the university. With the full course we can approach, but not realize, the accomplishment of our aims. Reckoning that at most we can call upon the students for six hours per week of outside reading or outside work (and it is only with a few students that we can get that amount of application), and adding three hours a week in the class-room, we are given a very small amount of time in which to accomplish anything like the ambitious aims mentioned. We cannot give a thorough, rigid training in economics—both principles and facts—until we increase the time of the work on both that goes into the elementary course. At the present time, large numbers of our men are leaving that course, who will not take any further work in that field, and who have no grasp of the principles involved in the subject, and no comprehension of the economic system under which we are living. If we could meet for recitation work four or five times a week throughout the year we could accomplish something worth while. A partial solution would be to raise the standard and practically require that the students, in order to stay in the course, must put in four, or five, or six hours of outside work each week. Another possibility is to give an intro-

ductory course, introductory to the proper course, which will be largely social and factual in character, and will deal somewhat with economic history and somewhat with economic geography and organization and control.

As to the best size of recitation classes, perhaps twenty men to a section is "ideal," though it is seldom realized in this day of very large classes. In a small section there are some very decided advantages. The instructor has the opportunity of eliminating very quickly the unfit; of paying more attention, if he so desires, to the able men, or distributing his time to all. At Harvard the "A" men are segregated and put into a separate section early in the year, which makes it possible to give them undivided attention. This improves the teaching in the other sections, as the instructor then need not go over the heads of the students of less capacity.

Professor Burbank then took up the question whether it is the function of the instructor to express his own views, or whether he is simply before his class to teach them to reason, and to present different questions of fact and different sides of the doctrine which is being studied. He said that it is a better policy for the instructor to keep his own views to himself for the most part; occasionally it is advantageous to bring them in. There is a great deal of danger of the instructor's becoming a propagandist of one sort or another if he is constantly expressing his own opinions. The student wants such an expression, but it is not necessary to yield in order to stimulate the interest of the students. In fact, we do not need to be concerned particularly to stimulate the interest at the present time; the very increase of numbers of students is a sufficient index of the interest taken.

Finally, referring to the point of view from which the course should be approached, Professor Burbank said he thought that Professor Fisher expressed the proper attitude in the preface to his book, where he intimates that until a student knows the physical structures he should not concern himself with any remedies.

Professor Agger, Columbia, continuing the consideration of aims, said that these might vary somewhat not only from teacher to teacher, but from institution to institution, but in general the aim should be, broadly speaking, to enable the student to interpret with some degree of intelligence the economic system which prevails, to understand its working, and to approach the problems which arise with a basis of some fundamental understanding. He agreed in substance with Professor Burbank as to the shortcomings of teaching and as to the importance of giving the student an understanding of the fundamental principles—a working understanding. Of course, the average student is interested in economics only from the point of view of practical life, and so in the main, in our text-books, we have divided the field putting the Introductory Principles at the beginning and the Practical Problems at the end; and most of the students are interested in the practical problems, and they take with a certain ill grace the preliminary study of the principles.

Now, it would seem to be possible to hitch up these two, and perhaps to obliterate entirely those distinctions which we have so often drawn between principles and problems, and to consider as a problem something in which we may assume the student is interested, with the idea of emphasizing the significance of the underlying principles. We can show the student that it is hopeless to try to get a practical idea of any problem, whether the tariff, or trade unions, without knowing the principles involved, just as

was the case with the boy John Dump, who started to build a table and then found he had to know something about measurements and other things in connection with what he was vitally interested in. There was thus brought home to him the significance of learning. To bring home the significance of such underlying principles is, perhaps, as far as we ought to go in elementary courses. That means that we shall have to plan a text particularly for our elementary work. Most of our texts are not in every way adaptable, and they must be especially handled, perhaps organized to a syllabus, differing, of course, with the principal problems which present themselves at the different institutions.

As to number of weekly exercises, Professor Agger disagreed with Professor Burbank. He was not in favor of much more than three hours a week. He had a chance in the Columbia Summer School work, where they had one hour each day, to make a little comparison between the two methods. Economics is a subject for which one must take time, but it is not the time one takes in class, but the time one takes for reflection and the processes of digestion, as it were. And it does not pay to observe too much in a given time, but the student must come back to the subject and reflect upon it. The instructor must give him a little time for that.

As to the teacher's attitude, Professor Agger thought that the teacher ought to present his own views, but not in the spirit of a propagandist. Teachers have no right to be propagandists in any sense. The student is to analyze and try to understand, and not till then to pass judgment. We ought to remember very distinctly and emphatically, as we teach these young men and women who come to us, to impress upon them the fact that they are not yet in a position to pass final judgment. They are too prone to do that anyway. Most of them are enthusiastic reformers, and perhaps from that point of view we ought to restrain our enthusiasm for reform, and bring home to the students the importance of understanding a thing before trying to pass judgment upon it. The speaker thought that too many people teach economics who do not get any fun out of teaching, and that a primary qualification of a good teacher of economics is to get a lot of fun from standing before a body of young men and young women and trying to make them understand the subject.

Proper humility before our pupils, showing that we are interested in them and interested from the point of view of having them understand, will help us in our teaching, and let them see that we are enjoying it with them. Finally, the most beautiful work can be done by hitching up for them the class-room discussion with the work of the world, that is, showing to the class the significance of what is going on in the world outside.

Professor Turner, New York University, said that the purpose of the elementary course may differ according to the character of the institution, but its place is that of a "foundation course," or a gateway to more advanced work in the department. He stressed the idea of the interdependence of the subject matter of economics. A principle should never be discussed to the exclusion of other things, he said, because the student gets a distorted notion and is likely to jump to a conclusion.

The speaker's scheme in teaching is to develop coherently the leading related ideas, emphasizing all the while the relationship existing between these. The student comes to see that he cannot reason upon one of the great, burning issues of the time, or safely analyze it, unless he considers

the situation as a whole, a situation of which it is itself a part. In fact, we should develop in the teaching of elementary economics the so-called "sixth sense," namely, the detection of hidden relationships in our economic thought.

After drilling for a considerable period of time in basic theory, Professor Turner said, the students like it. Theoretical discussion is more conducive to activity of mind than the practical problems. It is a dangerous procedure, to be frowned upon by the economists of the country, to introduce the student forthwith to the great practical problems, before he has such a grasp of the principles that he can deal properly with the problems in their "interdependence." To start with practical problems results in failure; exception might be granted if we could have plenty of time, say, two or three years, to start with the problems and gradually draw out a system of thought; but it would be a waste of a century of experience to do that. The practical problems, however, should not be eliminated but should be brought in to illustrate the fundamental principles we are discussing as would be done, for example, in the teaching of physics. Thus principles and practice should go together.

As to the question of the teacher's expression of opinion, Professor Turner said that everybody who successfully conducts a course of elementary economics, whether purposely or not, gives his own ideas to the students all the while. He has a plan in view and he is bound to give his own ideas. It is advantageous for the instructor to take a wrong position—purposely so—and argue for it, and make just as good a case as he can; or to announce, perchance, that he is about to make a mistake, and ask the students to detect him in that mistake; and then call upon some student to give expression to his thoughts and when he has expressed his ideas, have some other student criticize him, and let the discussion go back and forth, often to such an extent that the instructor must check it. He ought to have a class of fifty or sixty, at least, in order to raise the most interesting enthusiasm. If there are but fifteen or twenty students in a class, he does not do it. This discussion back and forth, and the drawing of conclusions before the class is a good thing, for it keeps the class wide awake all the while. If the students come to deem it better for them to have thought wrong than not to have thought at all, and if the teacher guides the discussion to the truth, and to the accomplishment of the purpose for which the course is intended, he will find that the outcome will be very good.

Professor Doten, Massachusetts Institute of Technology, discussing the relation between the teaching of economics and public policy, pointed out that the men active today in business and politics and on the bench are almost a generation away from their training in economics, and consequently we do not see the immediate effect of the training that is being given in our institutions today. One source of the teacher's difficulties is the character of the students that we are getting. The number of students going to college is increasing more than in proportion to the increase in our population. Students are coming more and more from the cities, because our city population is increasing more than the population in general. We are getting in that group of city students boys and girls who are unacquainted with the facts, not only of political life, but particularly of the economic organization of society. The farm boys and the boys from the country

come equipped with a fundamental structure of life, but the boy from the city home comes little equipped with the fundamentals which he can build upon or draw illustrations from. Further, there has grown up a style of teaching and a kind of training in our public schools which will not fit the student, when he comes to college, to make a consistent, thoroughgoing study of any text-book, particularly in our line. In the exact sciences this probably is different, but such training as the student has had in civics, economics, and the like, is more or less "scrappy." He comes up to college with an inability to take a text-book and read and digest it.

The speaker then considered the difficulty of maintaining the interest of students who flock into courses through compulsion. In a great many cases they are disappointed when they get into the course. They realize that this is an age when economic problems are to the front, but they do not bring an interest which is sufficiently deep-seated and sufficiently intelligent to get them interested after they come. We are adopting a general policy which seems to be permeating our whole educational system from the kindergartens up, to amuse our students rather than insist on their getting anything. There is too much time spent in figuring out ways of sugar-coating the pill, and making it easy for them to get these things. They lose a great deal through all our educational work, through reaction from the old idea of the disciplinary value of study.

Professor Doten remarked on the difficulty due, particularly in some institutions, to the students' coming to economics from the study of exact science. They develop very speedily a degree of intolerance for the inexact nature of the subjects we are obliged to teach them, and this bears upon the question whether we shall be dogmatic in our methods of presentation. It is better to be dogmatic, he said. He would rather teach a wrong theory, if he could get it across, and get these fellows to stand it, than to teach them a whole lot of theories about the same thing, in regard to no one of which was he convinced or convincing. The difficulty is that they have come with exact knowledge, and they expect exact knowledge, and when they get this open kind, weighted pro and con,—they question the instructor.

Professor Doten's method is to make copious use of illustrative problems to be solved by the students, and at the end of the first term to give out fifty questions that pretty generally cover the subject as taught, fifty rather searching questions that require a knowledge of practically all the principles involved, and to tell the students that out of these fifty questions he will take five for the final examination.

Finally he thought the device of debates might be used in economics. He would frame up a series of debates on economic questions, and assign debaters to present both sides of a subject in a formal debate, and follow this by a general discussion in class.

At the reconvening of the conference next morning, Professor Bye, Pennsylvania, spoke particularly on three points. First, he stressed a third aim in addition to the two defined in the previous discussion. This third very important aim is to give the social point of view, to cultivate the social standard of ethics on the part of the student. It is not our place to teach radical doctrines or stir up discontent, but the teacher of economics is not doing his duty, or filling the place he should, if he does not make the student see that there is a social significance to economic problems, and that

the thing we ought all to be working for is social welfare rather than individual welfare. The average man or woman who comes to college has a very highly individualistic point of view, and we can not overestimate the necessity of awakening the social conscience.

Secondly, he disagreed with the opinion that, in the case of technical students particularly, economics needs to be presented in a dogmatic way. That he considered a very serious mistake. The average man and woman in this country today is too dogmatic already about economic problems. We ought to show the students the true scientific attitude toward things, and one cannot be a true scientist without soon learning that there are many things about which one cannot be dogmatic. Those students who have been taught the exact sciences most, need most the very opposite sort of training in economics; they must be taught that there are some things about which we must be contented to remain in ignorance until we can gather more facts upon which to base a conclusion. It is a very great mistake to try to give exact knowledge where exact knowledge does not exist. One of the broadest things we can do as educators, in developing the minds of our students of economics, is to teach them to doubt and to hold a lot of problems in their minds for which they do not know the answer, and for which they must not expect to know the answer, but be seekers after truth.

Thirdly, the speaker discussed certain actual methods of teaching inside the class-room. The lecture he considered a mere make-shift, for the student will never get thinking ability by listening to somebody's else thoughts. To spend all the time in small sections is so much better as to outweigh, perhaps, the disadvantage of handling by even young and inexperienced instructors.

The students at the Wharton School, he said, come there for exact business training and are impatient with anything of which they cannot see the immediate value in dollars and cents; and elementary economics they relegate with contempt to the realms of unreality, as a mass of theoretical abstraction. So the instructors there are faced with the problem of making it appear real to them.

The speaker's solution has been to make constant use of newspaper material, in business statistics, in governmental publications, in advertisements, in speeches of business men, from all sorts of sources, and of business statements, such as balance sheets and the like, of firms familiar to the student. The speaker believed that the best way of handling the problem in the class-room is to give the student his text, let him read his theory outside the class-room, so that he will have the general idea in mind, but in the class-room let the instructor make the discussion concrete and practical. Let him never ask the student for definitions, never ask him to state principles, but let him bring into the class-room something about which he can hook up those principles. Thus in analyzing a balance sheet, the student is asked the significance of the different items, is asked to apply these theories to it, and he is asked which items are capital and which are not, and why; and if there is any difference he is asked to justify that difference; and he does that with the concrete material right before his eyes.

So the ideas of value and demand are clarified from advertisements and the papers. And for the equilibrium of demand and supply and the difference between market and normal values, excellent material can be found in the market reports. Similarly, for a statement of the Malthusian law, as

such, the student is never asked, but he is given some facts about the densities of population in different countries, and asked to interpret them. Thus his reading will give him the generalizations and abstract ideas; the class-room will give him the application of these to the phenomena of life. He will learn the principles more thoroughly than he can by any other method; he will see that they are real, and that they are practical. The so-called "case method" does not quite serve, for the student is not sufficiently capable of generalizing from the cases, and valuable as they are for illustrative matter they cannot be made to take the place of a certain text in economics and of the presentation of theory and analysis.

Questioning material in the shape of problems he considered valuable; of the questions in well-known books many are admirable, but many are hypothetical and unreal. They do make the student think through the principles he has been studying, but they do not particularly interest him; and they do not show him the importance and significance of the matter in hand.

In examinations, problems should be set to answer which are not memory tests, and not requests for definitions, but which will force students to apply to a concrete case the information which they have acquired. Examinations, the speaker believed, ought to be oral, and his own are almost entirely of that type.

In the general discussion Professor Rice, Dartmouth, said he had been much impressed by what Professor Bye had added to the statement of aims, but, in view of the difficulty of adequately realizing all aims in a single three-hour course, he raised the question of relative emphasis. Something must be given on the factual side, because of the lack of information which the student has as to facts.

Mr. Hoyt, American Telephone and Telegraph Company, spoke of the desirability of catching economic material both young and old, saying that we should have text-books for the consumption of business men, in a style that business men will read, without sacrificing scientific accuracy. In that case, interest would be passed on to their sons, like the interest in baseball and other things. He then spoke in advocacy of the "case method," which included among its advantages the possibility of removing the student's objection already referred to, that he is working with conflicting materials, and is not arriving at any definite results.

Miss Newell, Wellesley, told of the course in her institution in descriptive economics and sociology which precedes the course in economic principles. Women students, she said, were found to lack the knowledge of economic society, just the obvious objective facts; they did not have that background and it had to be furnished them.

Professor Brown, Smith College, was most unfortunately prevented by the adjournment of the conference Wednesday afternoon from contributing remarks she had prepared with particular reference to the teaching of women students. Her contribution is therefore appended.

My opinions as to the teaching of elementary economics are, of course, based upon my observation of the equipment, habits of thought, and needs of the students whom I have taught. I find that women students as a whole come to their first course in economics with relatively little direct experience of economic relations and institutions. They are consequently eager for information and apt to attribute undue importance to mysterious technical

phrases of business vocabulary. Likewise, having little knowledge by which to test them, they tend to accept the generalizations of economic theory quite uncritically, save as they conflict with the popular proverbs of street and press equally uncritically accepted, and to pigeonhole economic problems, each with its particular cause and cure. With few exceptions, their acquaintance with the market is limited to the retail store and their conception of it, that of the consumer. A considerable percentage of them will continue, after graduation, to be primarily consumers and directors of consumption as far as their explicit economic relations are concerned. At the same time, with the acquisition of political power and the leisure to exercise it, they will have more and more occasion for the consideration of public problems involving a variety of economic interests.

In view of these observations, I feel that the elementary course in economics should attempt primarily to develop in these students critical thinking along economic lines and some understanding of the individual's complex relations to economic processes and their control, with full consideration of the importance of consumption in the regulation and direction of production. I find it helpful toward these ends:—to encourage as wide descriptive reading as possible, and to point out various opportunities for immediate contact with industrial and commercial facts and conditions during vacation periods as well as the college term; to direct attention continually to the sources of facts and statistics as bearing on their validity; to discourage the use of abstract terms without evidence of complete understanding of their content; to insist upon clear and logical reasoning rather than any certain conclusions; and to emphasize the evolutionary and interdependent character of economic problems. In recognition of the students' own equipment, it seems reasonable to start the study of price with the retail shop, examining the complications which arise there as integral parts of the laws of price rather than exceptions to them.

As to method, the point of view here outlined demands the use of varied readings in addition to or in place of a single text, the integration rather than separation of principles and problems, the teaching of classes in small groups of not more than twenty-five students, with only occasional use of the formal lecture as an aid to the organization of material or an opportunity for the stimulus sometimes afforded by outside speakers. I see no way of developing thinking ability and a truth-respecting attitude of mind except by requiring students to think and express their thoughts under criticism.

## BUSINESS MEETINGS AT ATLANTIC CITY, NEW JERSEY

Pursuant to announcement in the program, the first business meeting of the Association was held in Haddon Hall, Atlantic City, December 28, President Davenport presiding.

By vote the reading of the minutes of the last meeting was dispensed with.

The following reports were made, and accepted: (1) of the Secretary; (2) of the Treasurer; (3) of the Auditing Committee; (4) of the special Finance Committee; (5) of the Joint Committee on Federal Statistics; (6) of the Committee on the Karelsen Prizes; (7) of the representatives on the American Council of Learned Societies; (8) of the Committee on Coördination in Taxation; (9) of the War Finance Commitee.

It was voted to discharge the following committees which had ceased to function: the War Finance Committee; the Committee on Coördination in Taxation; the Committee on Marketing; the Sub-Committee on Index Numbers; the Committee on Price Fixing. The joint Committee on Federal Statistics was continued.

The President appointed for the Nominations Committee Professors Fisher, Seligman, Dixon, Ely, and Gephart; and for the Resolutions Committee Professors Gardner, Agger, and Deibler.

The state of the Association's Treasury was discussed at considerable length. It was voted that a special Membership Campaign Committee of three be appointed by the Executive Committee, with power to add to their number as they may find expedient, and that a sum of money be appropriated by the Executive Committee for the purpose of financing this committee.

It was voted that voluntary contributions be invited from all our members, including life members, towards a sum for financing the special Membership Campaign Committee, as well as towards funds for general Treasury uses, the invitation to subscribe to be accompanied by a succinct explanation embodying the facts concerning revenues and expenditures.

It was also voted that the Executive Committee be authorized, in its discretion, to take such action, if any, as may seem necessary to make income equal expenditure.

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The second business meeting of the Association was held in Haddon Hall, Atlantic City, December 30, 1920, at 9:30 A. M., President Davenport presiding.

The following minutes of a meeting of the Executive Committee were read and accepted.[1]

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The third meeting of the Executive Committee was held in Haddon Hall, Atlantic City, December 29. Present: Professors Davenport, Deibler, Dewey, Fisher, Gardner, Westerfield.

Conforming with the request of the Committee, Professor Barnett appeared before it and explained the nature, plans, and purposes of the Personnel Research Foundation. Thereafter it was voted that the Secretary inform the Federation that the present poor state of the Association's finances makes it inadvisable to join the Federation as a charter member, but that the Association hopes to join later if permitted.

[1] See minutes of other meetings of the Executive Committee in the Secretary's Report, p. 183.

By vote at the last business meeting of the Association it was provided that the Executive Committee nominate the members of the special Membership Campaign Committee. The Executive Committee was of the opinion that this responsibility should be borne by the Executive Committee elected today. It therefore voted that the nominations of the members of the Campaign Committee should be made by the new president subject to approval of the Executive Committee by mail.

It was voted to authorize the Treasurer, if need shall arise, to borrow on the basis of the collateral note of the Association such sum as may be necessary to tide over the present emergency.

Appeal has been made to the Association to issue a protest against the action of the Commissioner of Labor Statistics in placing a charge on the *Monthly Labor Review*. It was voted to take no action.

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The Committee on Honorary Members reported progress and asked that it be continued as a permanent committee, and the Association voted accordingly.

Professor David Friday reported as the representative of the Association on the National Bureau of Economic Research, as follows:

THE NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.

REPORT TO THE AMERICAN ECONOMIC ASSOCIATION, 1920.

*Inception.* The plan to establish a Bureau which would undertake economic investigations in such a manner that they would be permanently impartial and scientific was formed by Messrs. Wesley C. Mitchell, Edwin F. Gay, and M. C. Rorty.

The need for accurate statistical information on which current opinions could be formed presented itself as one of the most important fields for investigation. This was emphasized by the experiences of the war, at which time this nation found itself lacking in exact quantitative data on which policies could be grounded. This need continues in peace times as well. There is the widest disagreement between radicals and conservatives in regard to the facts of the industrial situation.

To accomplish the purpose for which the Bureau was created, however, it was necessary to do more than assemble a staff of competent research technicians. In order that public confidence in the results might be assured, a Board of Directors was created to represent the diversified interests in our social problems. Science is represented by Messrs. Mitchell, Commons, Young, and Adams; business by Messrs. Mead, Gay, and Sterrett; and labor by Messrs. Frey, Stone, and Laidler. In addition to these men a number of national associations have each been asked to appoint an independent Director. The following appointments have been made:

| | |
|---|---|
| Periodical Publishers Association | A. W. Shaw |
| American Economic Association | David Friday |
| American Statistical Association | M. C. Rorty |
| American Federation of Labor | Hugh Frayne |
| American Bankers Association | George E. Roberts |
| National Industrial Conference Board | Frederick P. Fish |
| Engineering Council | Walter R. Ingalls |
| Federation of Farm Bureaus | Gray Silver |

With such a group of directors, it was felt that there would be public confidence in the results secured by the Bureau.

*Present Status.* Up to date, the Bureau has been engaged in making a careful estimate of the amount and distribution of the national income. This work began in May, 1920, and is well under way at the present time. It is difficult to place an exact time limit on research work, but the present investigation should be finished and submitted to the directors about April 1, 1921. According to the By-Laws each director will then have a reasonable opportunity (in this case a month) to examine the work and submit criticisms and suggestions. Just how much revision and delay

this will involve it is impossible to state in advance; but it appears reasonable to assume that final publication will take place during the summer.

The purpose of this study of the national income is to determine with all possible accuracy: (1) the adequacy of the total productive power of the country to meet the living needs of the population; (2) the relative proportions of the total output received by the various elements in production: capital, enterprise and labor; (3) sources for taxation and the amounts obtainable from each source; (4) the actual and the possible savings of the country; (5) the amount of the surplus of production over living needs.

Broadly speaking the question may be put in this way: Is the income of the country so large as to make its proper distribution the primary source of public interest; or is the income so small that the question of prime importance is how it may be increased?

The method employed has been to attack this problem from all possible angles and check the results against each other. The facilities at the disposal of the Bureau, the benefit derived from a careful study of the methods employed by former investigators, and the coöperation of the Directors appear to justify the belief that a more accurate result will be obtained than has yet been secured by any investigators in the field.

In the absence of Professor Edward D. Jones, chairman of the Committee, Professor Walton H. Hamilton reported as follows, for the Committee on an Institute of Economic Research:

At the last meeting on my motion the continuance or discharge of the committee was left with the Executive Committee.

On the acceptance of participation in the Institute of which Professor Mitchell is Director the committee was discharged.

Professor W. F. Willcox reported for the Joint Committee on Federal Statistics; this report was accepted. He then introduced the following resolutions which were adopted:

In accepting the report of progress of the Joint Committee to advise the director of the census the American Economic Association desires to record its hearty approval of the policy of eliminating nearly all the text from census publications for its purpose of hastening the appearance of the bulletins and final reports of its 14th census—a policy adopted by the Bureau of the Census after conferences with the Joint Committee.

The Economic Association further approves the recommendation made by the Joint Committee to the Bureau of the Census that it prepare and publish systematic scientific analysis of census results in the form of monographs on the more important census topics. These monographs should be prepared by the Bureau of the Census with the coöperation of specialists in the various topics selected for treatment.

The representatives of the American Economic Association on the Joint Committee are hereby authorized to urge this policy and to express the conviction of the Association that an adequate interpretation of the census figures constitutes an essential and in many respects the most significant part of its works upon the Census.

Professor Gardner reported for the Committee on Resolutions as follows:

"Realizing the great amount of time and labor involved in the discharge of the duties of the office of Secretary and Treasurer and the indebtedness of the Association to those of its members who have generously consented to undertake these duties, the Association desires to express to Mr. A. A. Young its thanks and deep sense of appreciation of the efficient service he has rendered as Secretary and Treasurer for the past six years."

This resolution was adopted unanimously.

Professor F. A. Fetter, chairman of the Committee on the Karelsen Prizes, reported the progress made in the determination of the award of that prize.

Professor Irving Fisher, chairman of the Nominations Committee, reported the following nominations, together with the recommendation that the President act as chairman of the Program Committee, ex officio:

For President, Professor Jacob H. Hollander, Johns Hopkins University.
Vice President, Professor Allyn A. Young, Harvard University.
Vice President, Robert S. Brookings, St. Louis, Mo.
Secretary and Treasurer, Professor Ray B. Westerfield, Yale University.
Executive Committee, Professor H. A. Millis, University of Chicago; Professor E. M. Patterson, University of Pennsylvania.
Editorial Board, Professor O. M. W. Sprague, Harvard University; Professor David A. McCabe, Princeton University.
Delegates to American Council of Learned Societies, Professor Allyn A. Young, Harvard University; Professor Henry B. Gardner, Brown University.
Program Committee, Professor Horace Secrist, Northwestern University.

The report was adopted, and the Secretary instructed to cast the unanimous vote of the Association for the nominees. The Secretary voted according to these instructions.

The Association then considered the place of the next Annual Meeting. Invitations were announced from Pittsburgh, Pinehurst, Lexington, Buffalo, Reading, and Toronto. Some members expressed a desire to meet with the American Historical Association; upon an informal preferential vote 22 favored going to Pittsburgh and 4 favored meeting with the American Historical Association.

Respectfully submitted.

RAY B. WESTERFIELD, *Secretary.*

# REPORT OF THE SECRETARY OF THE AMERICAN ECONOMIC ASSOCIATION FOR THE YEAR ENDING DECEMBER 20, 1920

The present Secretary of the Association assumed the duties of the office four months ago. Previous to that time one meeting of the Executive Committee had been held, the following report of which was sent by Professor Allyn A. Young.

The first meeting of the Executive Committee for the year 1920 was held in Room 425, Northwestern University Building, Chicago, on Saturday, May 8, at 2 P. M. There were present Messrs. Deibler, Dewey, Ely, Field, Robinson, Lutz, and Young.

In the absence of President Davenport, Vice-President Field presided.

It was voted to ratify the informal ballots already taken by mail by which Professor David Friday was selected to represent the Association on the directorate of the National Bureau of Economic Research, Inc., and Professors H. B. Gardner and A. A. Young were chosen as the Association's delegates, for the year 1920, to the American Council of Learned Societies.

The Secretary presented a letter from Dr. H. J. Harris, of the Library of Congress, calling attention to the desirability of the publication by the federal government of a bulletin in which the official rulings and orders of the different branches of the government should be printed. Discussion developed the opinion that the matter, however important, was not one in which the American Economic Association could properly take the initiative. By vote, however, the President was authorized to appoint, if it should seem desirable, one member to represent the Association on any committee including representatives of other societies, which might be constituted to deal with the matter.

Various problems relating to the Secretaryship of the Association were discussed. An opinion shared by several members of the Committee was that the Association must eventually establish permanent headquarters and employ a Secretary who would give his full time to the work of the Association. It was also suggested that at some future time the offices of the Secretary and of the Managing Editor of the AMERICAN ECONOMIC REVIEW might advantageously be joined.

The resignation of the present Secretary, which had been tendered to the Committee prior to the Annual Meeting in December, 1919, was accepted, and Professor Ray B. Westerfield was elected Secretary and Treasurer. This change, it was provided, should take effect at the mutual convenience of the retiring Secretary and the Secretary-elect.

It was voted that the next Annual Meeting be held on December 28 to 31, inclusive, of the current year, with the proviso that the first session might be held, if found convenient, on Monday evening, December 27. With respect to the place of meeting the Committee had no decided preference as between Washington and Atlantic City. The decision should hinge, it was felt, upon the nature of the program and the adequacy of the hotel accommodations available. The matter was therefore left in the hands of a special committee, consisting of Vice-President Field, the Chairman of the Program Committee, and the Secretary.

By vote of the Committee the Secretary was authorized to dispose of the

Association's surplus stock of past Publications at such prices as can be secured.

There being no other business, the Committee adjourned at 4.30 P. M.

ALLYN A. YOUNG, *Secretary.*

Pursuant to the above vote accepting the resignation of Professor Allyn A. Young and electing a new Secretary and Treasurer, the office effects were transferred the second week of August to New Haven, Connecticut, where Yale University has provided quarters free of rent and other charges. The new Secretary takes this occasion to thank Professors Young, Dewey, Field, Seligman and others for their kindly help and advice in making the transfer and getting started.

Early in September the Internal Revenue Bureau requested our Association to send representatives to a conference at Washington for the purpose of permitting the officials of the Bureau to receive suggestions and recommendations as to changes in the forms and schedules for the tax year 1920. The Secretary suggested the names of certain members who are tax experts and who were in Washington or its vicinity at that time. Of those suggested, Professor A. M. Sakolski attended the conference and his report is published in the December issue of the AMERICAN ECONOMIC REVIEW, pp. 885-7.

The second meeting of the Executive Committee for the year was held at 5:30, December 27, in Haddon Hall, Atlantic City. Those present were Professors Davenport, Deibler, Dewey, Ely, Field, Fisher, Gardner, Taylor, Willcox, and Westerfield.

The minutes of the last meeting of the Committee were read and approved.

The Secretary presented the question whether the American Economic Association should join the Personnel Research Federation. It was voted to postpone action until the next meeting of the Committee and to ask Professor Barnett to meet with the Committee and explain the place, purposes, and organization of the Federation.

Through the Germanistic Society of America certain German universities have applied to the American Economic Association to supply them, free of charge, the numbers of the AMERICAN ECONOMIC REVIEW which they did not receive during the war. After consideration the Committee voted that the Association is not in a position to grant the request at this time.

The World Metric Standardization Committee has informed the American Economic Association that a bill is before Congress providing for the gradual adoption of metric units of weights and measures as the exclusive American standards after a transition period of ten years, and asked the Association to aid the cause by appointing a special metric committee and passing favorable resolutions. It was voted by the Executive Committee that the Association take no action in the matter.

The American Economic Association is a member of the American Council of Learned Societies and is represented by two delegates. At the May meeting the Executive Committee appointed Professors A. A. Young and H. B. Gardner to represent the Association for the year 1920. The constitution and by-laws of the Association make no provision for the method of electing such representatives. It was voted by the Executive Committee that these representatives should be nominated by the regular Nominations Committee and elected in the same manner as the officers.

The following table indicates the changes in the membership of the Association during the year:

| | | |
|---|---|---|
| Members and subscribers in December, 1919 | | 2714 |
| Annual members in December, 1919 | | 2125 |
| Members resigned in 1920 | 102 | |
| Removed for lack of address | 19 | |
| Members dropped for non-payment of dues | 37 | |
| Annual members died | 23 | |
| | — | 181 |
| | | 1944 |
| New members in 1920 | | 269 |
| Total annual members in 1920 | | 2213 |
| Life members in December, 1919 | 86 | |
| Deaths of life members reported in 1920 | 2 | |
| | — | 84 |
| Honorary members in December 1919 | 5 | |
| Deaths of honorary members reported in 1920 | 1 | |
| | — | 4 |
| Total members in December, 1920 | | 2301 |
| Subscribers in December, 1919 | 498 | |
| Subscribers discontinued in 1920 | 55 | |
| | 443 | |
| New subscribers in 1920 | 122 | |
| Total subscribers in December, 1920 | | 565 |
| Total members and subscribers in December, 1920 | | 2866 |
| Net gain in members and subscribers in 1920 | | 152 |

It is a painful duty to report the decease of the following members during the year:

AVERY, SAMUEL P.
BEER, GEORGE L.
BODIO, LUIGI (*Honorary Member*)
BRECHER, G. A.
BULLARD, ALBERT W.
DODDS, ALEXANDER
EMERICK, C. F. (*Life Member*)
ESTABROOK, ARTHUR F.
JAYNE, HENRY LAB. (*Life Member*)
JONES, FRED G.
JUDSON, FREDERICK N.
LOEWY, BENNO
MACCLEAN, E. A.
MOHR, LOUIS
SANDERS, FREDERIC W.
SCHIFF, JACOB H.
SCHMIDLAPP, JACOB G.
SCHREITER, HENRY
SHEFFIELD, WILLIAM P.
SILLMAN, JOSEPH
STETSON, FRANCIS L.
STEVENS, RICHARD
STONE, I. FRANK
THOMPSON, CARL W.
VAIL, THEODORE N.
WILSON, HUGH M.

In closing his report, the new Secretary wishes to thank all those persons who have coöperated in the conduct of his office and in the preparation and direction of the present Annual Meeting.

Respectfully submitted.

RAY B. WESTERFIELD, *Secretary*.

## REPORT OF THE TREASURER FOR THE YEAR ENDING DECEMBER 20, 1920

The following exhibit presents the cash receipts and expenditures of the American Economic Association for the year ending December 20, 1920. This statement should be interpreted in connection with the balance sheet and income statement rendered by the Auditing Committee.

CASH RECEIPTS AND EXPENDITURES

| | | | |
|---|---|---|---|
| Cash on hand December 20, 1919 | | | $4,915.62 |
| *Receipts* | | | |
| Membership Dues | | $10,234.60 | |
| Subscriptions | | 2,734.08 | |
| Sales of Publications | | 862.43 | |
| Reprints of 1919 paid in 1920 | | 13.40 | |
| Interest | | 435.41 | |
| Maturing Bond | | 1,000.00 | |
| Profit and Loss | | 11.82 | |
| | | | $15,291.74 |
| | | | $20,207.36 |
| *Expenditures* | | | |
| Accounts of 1919 paid | | $1,004.58 | |
| Expenses of Executive Committee | | 164.48 | |
| Dues of Amer. Council of Learned Societies | | 110.80 | |
| Furniture and Fixtures | | 46.28 | |
| Paper Stock | | 1,853.00 | |
| Publications— | | | |
| Review Printing | $4,099.64 | | |
| Review Editorial | 2,622.75 | | |
| Review Expenses and Supplies | 1,902.84 | | |
| | $8,625.13 | | |
| Proceedings | 1,026.94 | | |
| Sundry Publication Expenses | 264.04 | | |
| | | 9,916.21 | |
| Secretary's Office— | | | |
| Traveling Expenses of Secretary | $150.91 | | |
| Office Salaries | 2,391.89 | | |
| Stationery and Office Printing | 153.88 | | |
| Office Supplies | 37.52 | | |
| Office Postage | 224.38 | | |
| Telephone and Telegraph | 64.71 | | |
| Freight and Cartage | 248.77 | | |
| Annual Meeting 1919 | 98.48 | | |
| Miscellaneous Expenses | 34.68 | | |
| | | 3,405.22 | |
| Insurance | | 75.25 | |
| Storage of Publications | | 150.00 | |
| | | | $16,725.82 |
| Cash on hand, December 20, 1920 | | | |
| Central Trust Company | | $3,023.01 | |
| First National Bank | | 445.86 | |
| Checks not deposited | | 12.67 | |
| | | | 3,481.54 |
| | | | $20,207.36 |

The office of the Treasurer was transferred to the present incumbent the second week of August. The transfer came at a time when the treasury was indeed in a very poor condition. The deficit for 1919 had been $1700 and during 1920 a very much larger deficit had been accruing. The causal elements of this increasing deficit are shown in the statistical tables which

have been posted during the Annual Meeting on the bulletin board and are also evident in the exhibits of the Treasurer and of the Auditing Committee. The chief factors of rising expense are:

1. The increased cost of paper for the *American Economic Review* and other publications.
2. The higher cost of printing our publications and office stationery.
3. The increase of salaries to clerical assistants.
4. The payment of travel expenses to members of the Executive Committee, which was authorized at the last Annual Meeting and made for the first time this year.
5. The dues of the Association to the American Council of Learned Societies, which were also paid for the first time this year.
6. The cost of moving the Secretary's office from Ithaca to New Haven. By reason of the disrupted condition of the express and freight service, the continuity of business of the Secretary's office necessitated the transportation of the office fixtures and files by motor vehicle; this was expensive. The transfer of the office also required the purchase of new stationery, rubber stamps, a table and chair, etc.

The serious nature of the present condition of the Treasury will be further stated by the Committee on Finance, which was appointed at the last Annual Meeting and which has made a study of the facts and has prepared a set of proposals for your consideration.

The Treasurer is of the opinion that no new burdens should be assumed by the Association until an excess of income over expenditure is assured.

Respectfully submitted.

RAY B. WESTERFIELD, *Treasurer.*

## REPORT OF THE AUDITING COMMITTEE

New Haven, Connecticut, December 24, 1920.

To the American Economic Association:

Your committee has audited the books of the American Economic Association for the fiscal year ended December 20, 1920. The accompanying income statement and balance sheet show the results of the year's transactions and the financial status of the Association as at the date of closing. The changes in the surplus account are analyzed in the accompanying detailed statement of surplus. The exhibits are in our opinion correct, and we certify that the balance sheet here presented is in agreement with the ledger accounts.

Respectfully,

EARL A. SALIERS,
PERCY W. BIDWELL,
JOHN D. HÄUSELEIN,
*Auditing Committee.*

INCOME STATEMENT

| | | | |
|---|---|---|---|
| **Ordinary Income** | | | |
| Dues | | $11,027.62 | |
| Less: | | | |
| Defaulted[2] | $100.00 | | |
| Estimated Defaulted | 500.00 | | |
| | | 600.00 | |
| | | $10,427.62 | |
| Interest | | 435.41 | |
| | | | $10,863.03 |
| **Ordinary Outgo** | | | |
| Office Salaries | | $2,391.89 | |
| Traveling expenses | | 150.91 | |
| Stationery and Office Printing | | 153.88 | |
| Postage | | 224.38 | |
| Office Supplies | | 37.52 | |
| Telephone and Telegraph | | 64.71 | |
| Freight and Cartage | | 248.77 | |
| Annual Meeting | | 98.48 | |
| American Council Learned Societies | | 110.80 | |
| Miscellaneous | | 34.68 | |
| Expenses of Executive Committee | | 164.48 | |
| | | | 3,680.50 |
| | | | $7,182.53 |
| **Publication Outgo** | | | |
| Printing, etc. | | $6,656.31 | |
| Editorial Salary | | 1,500.00 | |
| Contributional | | 1,122.75 | |
| Editorial Expenses and Supplies | | 1,902.84 | |
| Proceedings and Handbook | | 1,486.00 | |
| Sundry Expenses | | 264.04 | |
| | | | $12,931.94 |
| Storage of Publications | | $150.00 | |
| Insurance | | 75.25 | |
| | | | 225.25 |
| | | | $13,157.19 |

| | | | | |
|---|---|---|---|---|
| Publication Income | | | | |
| Subscriptions | | $2,903.58 | | |
| Less: | | | | |
| Defaulted[2] | $85.00 | | | |
| Estimated Defaulted | 50.00 | | | |
| | | 135.00 | | |
| | | $2,768.58 | | |
| Sales of Publications | | 839.48 | | |
| | | | 3,608.06 | |
| Excess of Publication Outgo | | | | 9,549.13 |
| Net Deficit for year | | | | $2,366.60 |

[2] Due from members for 1920 publications.
[3] Due from subscribers for 1920 publications.

BALANCE SHEET AS AT DECEMBER 20, 1920

| *Assets* | | | *Liabilities* | |
|---|---|---|---|---|
| Cash on Hand and in Bank... | | $ 458.53 | Membership Dues Prepaid.... | $ 289.75 |
| Cash in Savings Account: | | | Accounts Payable ..... | 1,104.94 |
| Central Trust Co., Cambridge, Mass. ..... | | 3,023.01 | Life Memberships ..... | 1,300.00 |
| Investments: | | | Prize Fund Reserve ..... | 1,500.00 |
| United Fruit Co. 4½'s of 1923.... | $1,000.00 | | Surplus ..... | 5,441.38 |
| 2d Liberty Loan.. | 1,000.00 | | | |
| 3d Liberty Loan.. | 1,000.00 | | | |
| Victory Loan .... | 1,000.00 | | | |
| | | 4,000.00 | | |
| Membership Dues Receivable ..... | $1,710.00 | | | |
| Less Reserve for Mem. Dues Rec. | 500.00 | | | |
| | | 1,210.00 | | |
| Accounts Receivable. | $245.64 | | | |
| Less Reserve for Bad Accounts Receivable ..... | 50.00 | | | |
| | | 195.64 | | |
| Paper Stock ..... | | 446.21 | | |
| Furniture and Fixtures ..... | | 302.68 | | |
| | | $9,636.07 | | $9,636.07 |

SURPLUS ACCOUNT

| | | | |
|---|---|---|---|
| Balance, December 18, 1919 | | | $7,505.29 |
| Miscellaneous Credits—Net | | | 673.30 |
| | | | $8,178.59 |
| Defaulted Membership Dues[1] | $303.75 | | |
| Uncollectible Accounts Receivable[1] | 66.86 | | |
| | | | 370.61 |
| | | | $7,807.98 |
| Net Deficit, 1920 | | | 2,366.60 |
| Surplus, December 20, 1920 | | | $5,441.38 |

[1] Accounts of 1919 and prior.

## REPORT OF THE MANAGING EDITOR OF THE AMERICAN ECONOMIC REVIEW FOR THE YEAR ENDING DECEMBER, 1920

The cost of the REVIEW during the past year has been $9,734.18 as compared with $9,454.77 for 1919 and $7,694.06 for the pre-war year 1916. By principal items the cost has been as follows:

| | |
|---|---|
| Salary of editor | $1500.00 |
| Payments to contributors | 1122.75 |
| Clerical assistance | 1595.64 |
| Supplies | 307.20 |
| Printing (including paper) | 6656.31 |
| | $11,181.90 |

The principal change has been in the printing cost. Outside of paper cost, the expenditure for printing during the past year has been $5198.08 as compared with $4123.75 in 1919. As this matter is discussed in the report of the special committee on finances of the association, no further reference need be made at this time.

There has been no change in the make-up of the REVIEW, the space given to leading articles, reviews, periodicals, abstracts, etc., being about the same as in previous years. The total number of pages printed was 936 as compared with 948 in 1919.

There have been two changes in the staff for the preparation of periodical abstracts. Professor Walton H. Hamilton, of Amherst College, has undertaken the work of abstracting articles in theory, succeeding Dr. Arthur N. Young; and Professor David A. McCabe, of Princeton University, has succeeded Dr. George E. Barnett in summarizing current material on labor.

The following persons have served as editors: Professor G. E. Barnett and Dr. Lewis H. Haney, whose terms expire this year; Professor A. E. Cance and Professor W. E. Hotchkiss, whose terms expire in 1921; and Professor Julius H. Parmelee and Professor Carl C. Plehn, whose terms expire in 1922.

During the past year 99 persons have coöperated in writing for the REVIEW, including leading articles, communications, reviews, document notes, and periodical abstracts.

Appended are comparative tables showing the distribution of contents and cost by principal items, in continuation of tables previously given.

DAVIS R. DEWEY,
*Managing Editor.*

TABLE 1.—PAGES GIVEN TO EACH SECTION

| Year | Leading Articles | Reviews | New Books Listed | Documents, Repts., etc. | Periodical Abstracts | Notes | Doct. Diss. | Totals |
|---|---|---|---|---|---|---|---|---|
| 1911 | 342 | 304 | 62 | 89 | 133 | 40 | 8 | 878 |
| 1912 | 291 | 298 | 101 | 110 | 186 | 41 | 11 | 1038 |
| 1913 | 347 | 268 | 104 | 141 | 167 | 43 | 8 | 1078 |
| 1914 | 327 | 243 | 136 | 113 | 166 | 35 | 10 | 1030 |
| 1915 | 314 | 257 | 90 | 142 | 144 | 42 | 14 | 1003 |
| 1916 | 388 | 256 | 91 | 90 | 140 | 46 | 13 | 1024 |
| 1917 | 378 | 192 | 110 | 127 | 120 | 42 | 15 | 984 |
| 1918 | 372 | 157 | 91 | 112 | 99 | 41 | 17 | 906 |
| 1919 | 373 | 163 | 164 | 103 | 95 | 47 | 12 | 948 |
| 1920 | 387 | 109 | 155 | 98 | 122 | 42 | 15 | 936 |

TABLE 2.—NUMBER OF ITEMS IN EACH SECTION

| Year | Leading articles | Reviews | New Books listed | Document notes | Periodical abstracts |
|---|---|---|---|---|---|
| 1911 | 21 | 207 | 785 | 27 | 1074 |
| 1912 | 17 | 218 | 1452 | 32 | 1727 |
| 1913 | 20 | 198 | 1416 | 42 | 1877 |
| 1914 | 20 | 145 | 1575 | 33 | 2021 |
| 1915 | 16 | 135 | 1062 | 29 | 1758 |
| 1916 | 24 | 143 | 1024 | 22 | 1586 |
| 1917 | 20 | 100 | 1156 | 25 | 1441 |
| 1918 | 22 | 64 | 923 | 27 | 1264 |
| 1919 | 22 | 76 | 1471 | 21 | 1295 |
| 1920 | 22 | 42 | 1690* | 17 | 1626 |

* Of which 63 were briefly reviewed.

TABLE 3.—PERCENTAGE GIVEN TO EACH SECTION

| Year | Leading Articles | Reviews | New Books Listed | Documents, Repts., etc. | Periodical Abstracts | Notes | Doctoral Dissertations |
|---|---|---|---|---|---|---|---|
| 1911 | 34.9 | 31.0 | 6.2 | 9.1 | 13.4 | 4.0 | .8 |
| 1912 | 28.0 | 28.7 | 9.6 | 10.6 | 17.9 | 4.0 | 1.0 |
| 1913 | 32.2 | 24.9 | 9.6 | 13.0 | 15.5 | 4.0 | .7 |
| 1914 | 31.8 | 23.6 | 13.2 | 11.0 | 16.1 | 3.4 | .9 |
| 1915 | 31.3 | 25.7 | 9.0 | 14.2 | 14.4 | 4.2 | 1.3 |
| 1916 | 37.9 | 25.0 | 8.9 | 8.8 | 13.7 | 4.5 | 1.2 |
| 1917 | 37.4 | 19.7 | 11.1 | 12.9 | 12.2 | 4.2 | 1.2 |
| 1918 | 41.1 | 17.3 | 10.2 | 12.4 | 11.0 | 4.6 | 1.7 |
| 1919 | 39.2 | 17.1 | 16.2 | 11.4 | 10.0 | 4.9 | 1.2 |
| 1920 | 41.1 | 11.4 | 16.3 | 10.3 | 13.2 | 6.2 | 1.5 |

## REPORT OF THE SPECIAL COMMITTEE ON THE FINANCES OF THE AMERICAN ECONOMIC ASSOCIATION

In the spring of 1920 the financial outlook of the Association became so dubious that a special committee was appointed to consider the matter. Since that time, the situation has become distinctly worse. At the end of the year 1918 there was a small annual surplus, but in the year 1919 the deficit amounted to almost $1700 and in the year 1920 it will amount to a little over $2300. In order to pay our bills we have been compelled virtually to exhaust our balance at the bank.

The situation may be put succinctly as follows:

Between 1915 and 1920 our membership rose from 2444 to 2866 and our total income rose almost $2000, namely from $12,581 to over $14,470. As against this growth in our revenues, our total expenses have increased by almost $6000, namely, from $10,921 in 1915 to $16,726 in 1920.

The increase in the expenditures is due in part to the office expenses, such as salaries, postage, and the like; but in far greater part—over five-sixths—to the publication expenses. The office expenses increased from $2858 in 1915 to $3569 in 1920 or about $700. The publication expenses, on the other hand, rose about $5000. Of the publication expenses again, the overwhelming part was due to increased cost of paper and printing. The exact figures are set forth in detail in the appendix herewith.

The committee approached the subject first from the point of view of a possible decrease in expense. We have come to the conclusion that it would be unwise to make any pronounced change in the publications. It is possible somewhat to reduce the size of the Proceedings by including certain papers and perhaps even certain discussions in the regular numbers of the *Review*. It is furthermore possible, without any serious loss, slightly to reduce the total number of pages of the *Review*. We prefer, however, not to make any definite recommendation as to what is on the whole a doubtful policy, and content ourselves here with the suggestion that this matter be brought to the attention of the editorial committee.

At best, however, only a slight saving can be expected from this source. Inasmuch as there seems to be no immediate likelihood of any substantial reduction in the other office expenses, we are therefore confronted by the necessity of increasing the revenue rather than reducing expenses.

There are only three ways in which the revenue can be augmented: from the income of a permanent fund; from an increase in membership; or, from an advance in the membership dues.

It would, of course, be in every way desirable if a substantial endowment fund could be secured. We believe that such an endowment is by no means impossible of attainment if a careful and well-considered movement for this purpose were launched. But we think that at this particular juncture, when the country is confronted by a period of falling prices, the outlook would be unpropitious. While reserving this expedient for what we hope is not a very distant future, we cannot bring ourselves to recommend the adoption of this plan at present.

It is quite otherwise, however, with a campaign to increase membership. At various periods in our history a systematic campaign has been inaugurated with successful results. There is no reason why a new campaign should not promise even better results. In academic circles there are still

many of the younger members of the departments of economics and political science who are not members of the Association; and there is no reason why among more mature students, both undergraduate and graduate, a very large number should not be persuaded to join. Moreover, in non-academic circles, we have only to point to the success of systematic attempts to increase membership on somewhat modern and new lines that have been made by some of our sister associations. We believe, however, that the responsibility for such a drive to secure new members should not be put upon the Secretary. He is already quite fully occupied in attending to the current business of the Association. We believe that if a special committee of energetic and loyal members were appointed, for this express purpose, and with power to add to their numbers so that there would be a representative in every large university, as well as in every important non-university city, much could be accomplished. It is not at all unlikely that such a campaign would bring us within a comparatively short time at least several hundred new and permanent members.

Our first recommendation therefore is that the Association appoint a special committee of three on membership, with power to add to their numbers. We recommend that an appropriation not to exceed $1000 for the year 1921 be made to cover the expenses of this committee and we recommend that this committee keep in close touch with the Secretary.

Even at best, however, it will be some time before the results of the work of this committee become apparent. It is necessary therefore to provide for an immediate replenishment of the depleted exchequer of the Association and to assure a surplus instead of a deficit.

In considering this aspect of the matter, we have been influenced by the above analysis of the expenses, showing that about two-fifths of the entire increase in the publication expenses has been due to the increase of the cost of paper. While we believe that the prices of paper will not soon revert to the pre-war level, we do look forward to a substantial fall in prices in the not distant future. We consider it not impossible that some of the other publication expenses may also suffer a reduction before very long. A part, therefore, of our difficulties is due to a temporary situation which will, in all likelihood, be relieved before very long; but another part is due to the more permanent changes in the general price level.

The exact weight to be attached to each of these considerations is difficult to determine. While we are convinced that a permanent addition to our revenues is imperative, we feel that a definite increase of the annual membership fee ought to be postponed until after it has become possible to estimate the weight of the more temporary factors. We have therefore decided to make at this point two recommendations.

In the first place, we recommend that voluntary contributions be invited from all our members, including our life members, the invitation to subscribe being accompanied by a succinct explanation embodying the above facts.

In the second place, we recommend that there be imposed upon each member (but not upon subscribing public libraries) an assessment of $2.50 for the year 1921.

This assessment ought to be accompanied with a notice calling attention to the fact that if, as is hoped, the general price level and especially the price

of paper should fall in the immediate future, the assessments for the succeeding years, or the incorporation of the assessment into the permanent annual dues, may be expected to be substantially reduced.

We are of the opinion that even though the assessment may slightly diminish our membership, the proceeds of the assessment, together with the yield of the voluntary contribution, will suffice to enable us to pay our current bills in 1921 and to reconstitute the permanent balance upon which we have been compelled to trench.

We further recommend that this matter be kept under advisement by the Executive Committee and that it be carefully considered in the autumn of 1921 so that a recommendation as to the definitive policy of the Association may be made at the 1921 meeting. If the expectations of the committee as to the price changes and as to the success of the membership committee are realized, it may become possible to finance the Association permanently with an increase of annual dues to $6. If the membership committee should be successful in increasing the membership of the Association, it may even become possible to continue without any permanent increase in dues. On the other hand, if our expectations are not met, or if the situation should change in other respects, it may become necessary to increase dues to $7.50, or even to a larger figure.

Inasmuch as we have recommended an attempt to secure new members, the question arises as to whether the efforts of the membership committee would be impeded or even frustrated by the imposition of an assessment. It is therefore recommended that the propriety of exempting from assessment new members secured during the year 1921 through the efforts of the membership committee be left to the committee on membership with power.

With the adoption of the recommendations mentioned above we may look forward to the immediate future without anxiety.

EDWIN R. A. SELIGMAN,
ALLYN A. YOUNG,
WILLIAM F. GEPHART,
DAVIS R. DEWEY,
RAY B. WESTERFIELD.

APPENDIX

| | 1915 | 1920 | Excess |
|---|---|---|---|
| Paper | $ 874 | $1,910 | $1,036 |
| Printing | 2,820 | 6,237 | 3,417 |
| Total Paper and Printing | 3,694 | 8,147 | 4,453 |
| Total Publication Expenses | 8,063 | 13,157 | 5,094 |
| Office Expenses | 2,858 | 3,569 | 711 |
| Total Expenses | 10,921 | 16,726 | 5,805 |
| Total Income | 12,581 | 14,471 | 1,620 |
| Surplus or Deficit | +1,660 | —2,366 | ..... |
| Deficit 1919—$1,688. | | | |
| Membership | 2,444 | 2,866 | |